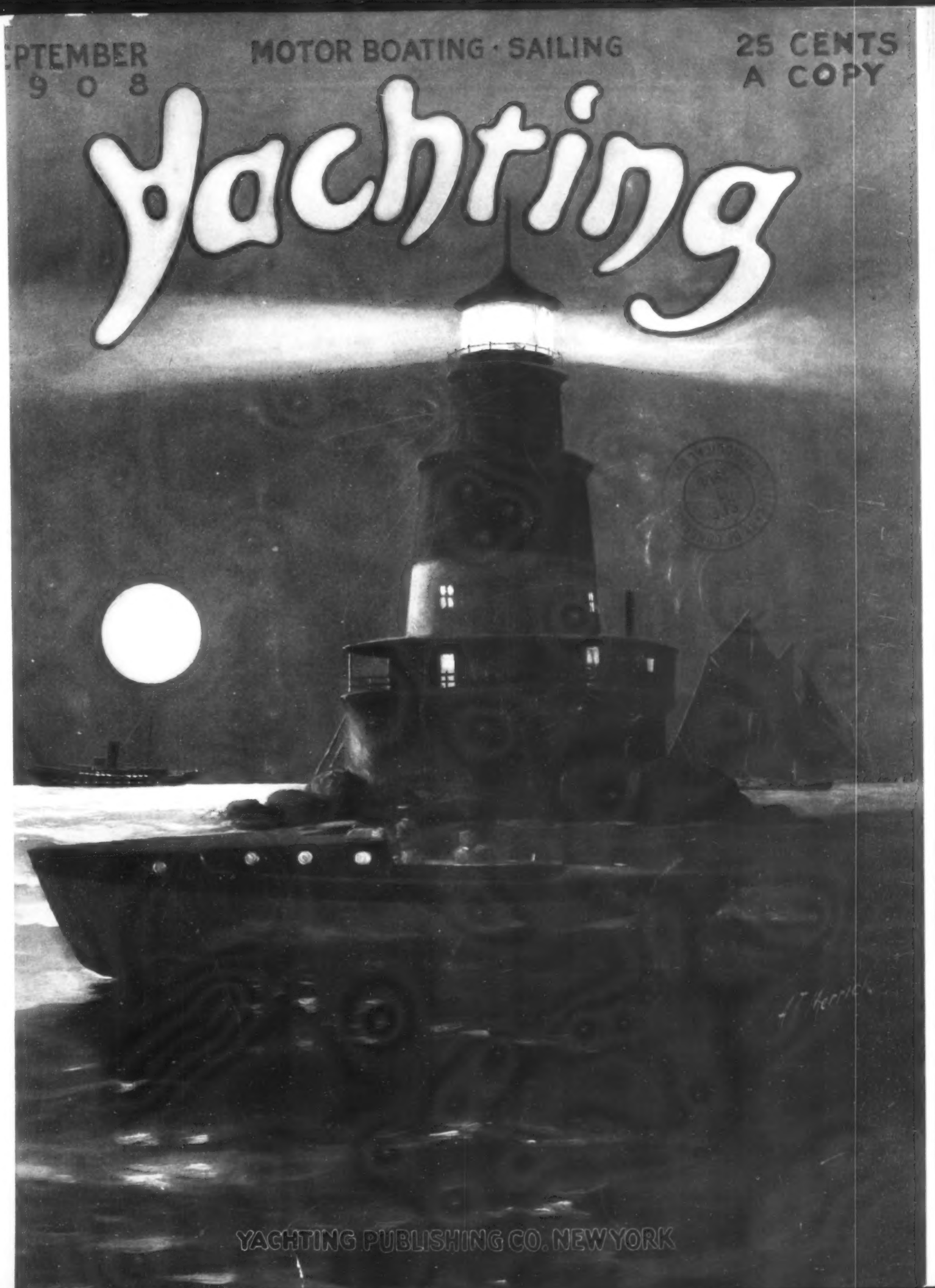
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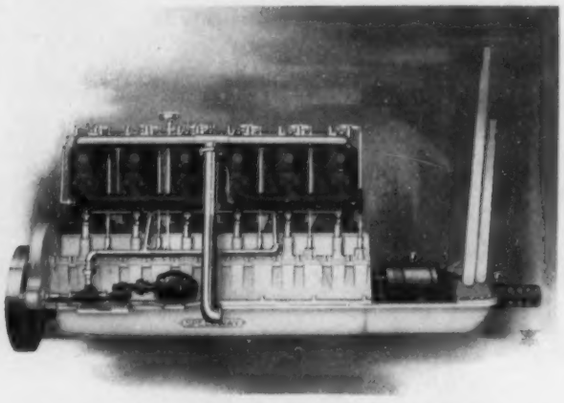

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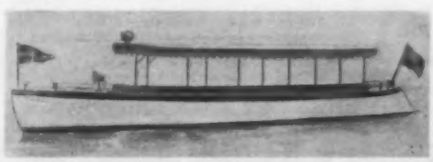
NO. 915—FOR SALE.—Fast Herresboff centerboard sloop yacht, 42 x 29 x 9.3 x 4.2. Built 1902. Oak frames, cedar and mahogany planking, copper and bronze fastened. Outside lead ballast. Good sized cabin and cockpit. Several suits of sails by Ratsey and Herreshoff in excellent condition, as is also the standing and running rigging, spars, etc. Outfit includes anchors, cables, lights, sail covers, etc. Has been well kept up. Is a good sea boat, having cruised from New York to Bar Harbor. Will be sold cheap before laying up. Located near New York. Henry J. Gielow, 50 Broadway, New York.

NO. 2056—FOR SALE.—Twin screw launch, hunting cabin type, 30 ft. over all, 9 ft. beam, 2 ft. 6 ins. draught, built 1904. Accommodates three in cabin; 5 ft. headroom. Equipped with two 12 H. P. Palmer motors, new 1905. Very well found. A good comfortable boat; price low. Engines connected separately. In good running order. Henry J. Gielow, 50 Broadway, New York City.



NO. 2252—FOR SALE.—Very desirable open launch, 31 ft. over all, 6 ft. 5 ins. extreme beam, and 30 ins. draught. Built Fall of 1906 from designs by Skene. Constructed of white oak, cypress and select Honduras mahogany; all fastenings of copper, brass or bronze. Equipped with 20 H. P. 4-cylinder, 4-cycle Buffalo engine, giving speed of 11 to 11½ miles, the latter being made over measured course. This boat was used very little in 1907, and has fine equipment, including searchlight, dynamo and storage batteries, cushions, etc. Price extremely low for quick sale. Henry J. Gielow, 50 Broadway, New York.

FOR SALE OR CHARTER. Fine 60-ft. Auxiliary Schooner. Fully equipped. Just the boat for North, South or anywhere. Address G. H., care of YACHTING.

NO. 1240—FOR SALE.—Twin screw, flush deck auxiliary yawl, 86 x 58 x 15.6 x 10.6. Designed and built by Fife in Scotland, 1898. Composite construction. Inside and outside ballast, 18 tons. Interior finish mahogany. One double and two single staterooms, and two transoms in good sized main cabin. Sails, spars, rigging, awnings, lights, ground tackle, dinghy, and outfit below deck, all new 1908. Also has new mahogany launch. Two Lathrop 20 H. P. gasoline engines, new 1908, giving speed of 8 miles. Acetylene lights. Gasoline tanks in separate watertight compartment. A handsome model and excellent sea boat. Special concessions if sold before laying up. Henry J. Gielow, 50 Broadway, New York.

NO. 686—FOR SALE.—Handsome gasoline yacht, 75 ft. over all, 14 ft. beam and 3 ft. 6 ins. draught. Built late 1903. Twin screw; two first-class 25 H. P. Standard engines giving speed of 12 miles. Fast sailer. Complete inventory—cushions, carpets, curtains, lights, etc. Everything looks new and in the finest condition. Deckhouse 48 x 14 ft.; finished in finest mahogany, white and gold. Accommodations for 12, including two staterooms. Bathroom and two toilets. Will sell very reasonable if taken before season closes. Inspected by appointment. Henry J. Gielow, 50 Broadway, New York.

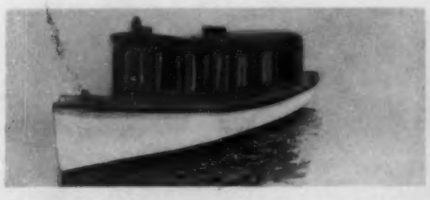
NO. 244—FOR SALE.—Keel sloop yacht, one of the most desirable all-around boats of her size, in thoroughly first-class condition throughout. Well built, staunch and able in all weathers. 38 x 27 x 9 x 6. Five tons. Lead ballast on keel. Narrow mahogany trunk cabin and cockpit. Square glass windows on sides of trunk. Sleeping accommodations for four in cabin and man forward. Handsome interior finished bright in mahogany and other hard woods. Full headroom in cabin, and toilet room. Cross cut sails new 1907. Fully equipped for cruising, outfit includes bright cedar dinghy, awnings, sail covers, lights, anchors and cables, large ice box, two-burner oil stove, cushions, carpet, etc., etc. Compass in cockpit floor under glass deck light. Good sized water tank. Would make an excellent boat for the Handicap Class, as is completely fitted out with light sails which have had but little use. In commission, will be laid up about October 1st. Price low, but if sold for delivery about September 30th special concession will be made in price. Henry J. Gielow, 50 Broadway, New York.

NO. 1950—FOR SALE.—Up-to-date cruising power boat, 50 ft. 7 ins. over all, 45 ft. waterline, 10 ft. beam and 2 ft. 9 ins. draught. Built 1907; designed and built by well-known firms. Accommodations for seven in owner's party, including double stateroom. Two toilets. Handsomely finished and furnished. Equipped with 30 H. P. 4-cylinder, 4-cycle "20th Century" engine, giving speed of 10 to 11 knots. 200-gallon gasoline tank. Electric lights. Launch on davits. Probably the finest boat of her size and type. Exterior and interior finish of mahogany. Price very low if sold before laying up. Henry J. Gielow, 50 Broadway, New York.

NO. 2250—FOR SALE.—Seagoing schooner yacht thoroughly sound and able. Completely rebuilt 1905. 50 ft. over all, 40 ft. waterline, 15 ft. 5 ins. beam, 4 ft. 10 ins. draught. Outside ballast. 6 ft. headroom. Sails, running and standing rigging in good condition. Asking price $2,000, but owner will make liberal concessions if sold while in commission. Because of fine ventilation yacht would be especially desirable for southern waters. Reason for selling, owner is buying larger boat. Henry J. Gielow, 50 Broadway, New York.

NO. 1455—FOR SALE.—Very handsome twin screw, cruising cabin launch, 47 x 43 x 9 x 3. Built for the present owner in 1905 in the best possible manner, and is in splendid condition, everything having been thoroughly gone over each year. Interior finish, selected mahogany. Headroom 6 ft. 3 ins. Accommodations consist of pilot house, in which three can sleep, saloon with two Pullman berths, toilet room, galley and engine space aft, and roomy decks forward and aft with awnings over them and brass rails each side. Two 4 cylinder, 4 cycle engines, 15 H. P. each, and very reliable. Copper gasoline tank in bow, 150 gals. Acetylene lights and searchlight. Round bottom dinghy on davits. Inventory includes curtains, cushions, carpets, life rings, lights, whistle, boat cover, anchors, cables, etc., etc. Must be seen to be appreciated. In commission. Price reasonable if sold now. Henry J. Gielow, 50 Broadway, New York.

NO. 2178—FOR SALE.—The bargain of the season. Yawl, keel with centerboard under cabin floor, 50 x 36 x 14 x 4.8. Built 1898. Spoon bow, overhang stern, trunk cabin and cockpit. Lead ballast inside, iron on keel. Full headroom. Four berths in cabin, one in forecastle. Enclosed toilet room and lavatory. Galley. Sails new 1907. Must be seen to be appreciated. Adapted for installing power under lazarette. Sold to build larger boat. Located South Brooklyn. Price, $1,500. Henry J. Gielow, 50 Broadway, New York.



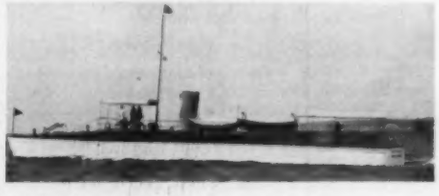
NO. 1374—FOR SALE.—Cruising half-cabin launch, 30 x 7 x 2 ft. 6 ins. Built 1904. Engine, 2 cylinder, 4 cycle, 12 H. P. Speed, 9 miles. Excellent boat. Has had best of care. Cabin forward, extending aft to engine space, over which is a standing roof with side curtains. Bright varnished decks. Nickel railings fore and aft. Toilet room. Well equipped throughout. Price attractive. Inspectable in New York. Henry J. Gielow, 50 Broadway, New York.

NO. 369—FOR SALE OR EXCHANGE.—Fast keel cruising yawl, 44 ft. 8 ins. over all, 29 ft. 6 ins. waterline, 10 ft. 4 ins. beam, and 6 ft. 6 ins. draught. Built 1898 by Stearns & McKay. Oak frames; yellow pine planking; copper fastened. 4 tons lead on keel. Excellent freeboard. Cockpit 7 ft. long. Cabin 13 ft. 6 ins. in length; full headroom. Interior finished in light colored wood, similar to white mahogany. Toilet. Accommodations for four. Sails new 1906 and 1907. Complete outfit. This boat is very able, in first-class order, and very fast. Has won numerous races. Now in commission, and liberal concession will be made if taken soon. Or, will exchange for keel sloop or yawl about 55 ft. over all. Henry J. Gielow, 50 Broadway, New York.

NO. 2195—FOR SALE.—Half-cabin launch, 25 ft. over all, 6 ft. beam and 24 ins. draught. Cabin finished in dark oak; 6 ft. headroom. Leather cushions, side lights, new awning, folding anchor, etc. Boat was thoroughly overhauled 1907-8. Equipped with 6 H. P.1 cylinder, 2 cycle Mianus motor, in first-class condition. 50 gallon copper gasoline tank. In commission; sold at sacrifice price if taken quickly. All fittings of brass. Henry J. Gielow, 50 Broadway, New York.

NO. 2247—FOR SALE.—Gasoline launch, 33 ft. over all, 30 ft. waterline, 7 ft. 6 ins. beam, and 2 ft. 6 ins. draught. Built 1906. Canvas side curtains, toilet, complete set of lights, cushions, 10 ft. tender, etc. Equipped with 10 H. P., 2 cylinder, 4 cycle engine. Copper gasoline tank, 62 gals. Hull construction: oak keel and frames, ¼ in. cedar planking. Henry J. Gielow, 50 Broadway, New York.

NO. 1850—FOR SALE.—Handsome and able schooner yacht. In first-class condition and fully equipped. 98 x 68 x 20 x 9. Keel and centerboard. Built in 1903. Outside lead ballast. Interior finish mahogany and white. One double and two single staterooms with two sofas in main saloon. Bathroom and two toilets aft. Ratsey sails in good order, as are also the spars, rigging, etc. Naphtha launch, gig and dinghy. Acetylene lights. Adapted for the installation of auxiliary power. Attractive price if sold this Fall. Henry J. Gielow, 50 Broadway, New York.

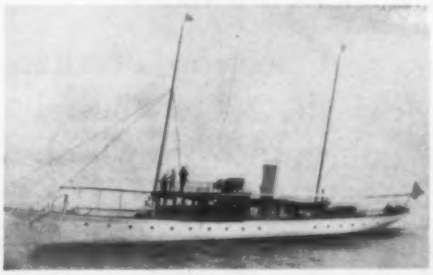


NO. 1941—FOR SALE.—Combination express and cruising type of motor yacht. 80 ft. over all, 72 ft. waterline, 11 ft. beam, 4 ft. 6 ins. draught. Built 1907. Condition first-class. 300 H. P. Standard engine, giving speed of over 18 miles per hour. Interior finish mahogany. Owner's quarters aft, consisting of two staterooms and main cabin with two transom berths; also two toilet rooms. Crew's quarters, galley and engine room forward. Gig and dinghy. Electric lights and searchlight. Well equipped throughout. Will be sold at material reduction from cost before laying up. Henry J. Gielow, 50 Broadway, New York.

NO. 1799—FOR SALE.—Auxiliary open catboat, 22 feet over all, spoon bow, overhang stern. Bowsprit, jib and mainsail. Boat in first-class condition. Sails new last year. Engine installed this summer; three-horse "Refined," copper cylinder jacket. Installed port side, and very small. Speed about 6 knots. Boat is very fast under sail. Beamy. Safe. Good construction. Rigging in excellent shape. Galvanized anchor and chain. Sail cover. Oars, oarlocks. Centerboard. Price, $165. After boat is hauled out price will be increased by the cost of hauling out. Located Rhode Island. Henry J. Gielow, 50 Broadway, New York.

NO. 2123—FOR SALE.—Desirable cabin cruiser, 37 ft. over all, 9 ft. 4 ins. beam, and 2 ft. 6 ins. draught. Built 1905. Finished in mahogany inside, oak outside. Accommodations for four. Toilet. Galley aft. Very good inventory; dinghy on davits. Electric lights; dynamo and storage batteries. Equipped with 16 H. P. 4-cylinder, 4-cycle Speedway motor, giving speed of 9 miles. 70-gallon copper gasoline tank, also water tank. This launch is in excellent condition; constructed of oak, cedar and copper. Brass rails fore and aft. Henry J. Gielow, 50 Broadway, New York.

NO. 1878—FOR SALE.—Keel cruising schooner yacht, 60 ft. over all, 48 ft. waterline, 14 ft. beam, and 7 ft. 7 ins. draught. Built 1906–7. Outside iron ballast. Flush deck, trunk cabin and cockpit, the latter about 15 ft. long. Saloon 14 ft. long; over 6 ft. headroom. Finished in cypress. Accommodations for eight. Sails new 1907. Complete equipment. One of the best cruisers of her size. Price low. Henry J. Gielow, 50 Broadway, New York.

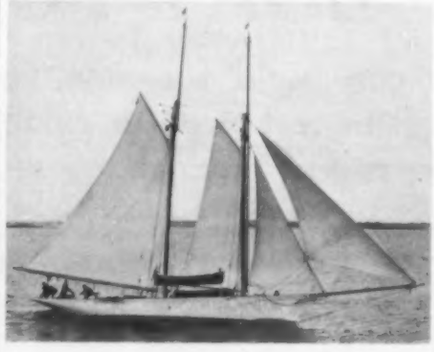


NO. 12—FOR SALE.—Desirable flush-deck steam yacht. 125 x 107 x 14 x 6. Speed, 12 to 14 knots. Built by Herreshoff, 1894. Large bridge deck on forward deck house, which contains dining saloon, with owner's and guests' quarters below forward, consisting of three double staterooms and saloon, bath room and two toilets. Officers' and crew's quarters aft. Watertube boiler and triple expansion engine. Ample coal and water capacity. Electric dynamo and storage battery. Completely and handsomely furnished; has always been well kept up. Offer desired. Henry J. Gielow, 50 Broadway, New York.

NO. 1945—FOR SALE.—Desirable half-cabin launch, 33 ft. over all, 7 ft. 6 in. beam, built 1900; oak frames, cedar planking, copper fastened throughout. Equipped with 15 H. P., 4 cylinder, 4 cycle Buffalo motor, new 1905. Copper tank, 60 gals. Full headroom; Sands' toilet, water tank, refrigerator, cushions, etc. Everything in good condition. Price low. Henry J. Gielow, 50 Broadway, New York.

NO. 1782—FOR SALE.—Cruising keel sloop, 35 ft. 6 ins. over all, 23 ft. 6 ins. waterline, 12 ft. beam and 4 ft. 6 ins. draught. Built 1907, in very substantial manner. Frames 2½ x 1¾ in. oak, cedar planking 1¼ in. Jib and mainsail, also covers. 3,400 lbs. outside ballast. Cabin 12 ft. long, finished in mahogany and white. Toilet. Headroom 5 ft. 8 ins. Accommodations for 2 to 4. Price very attractive. Henry J. Gielow 50 Broadway, New York.

NO. 26—FOR SALE.—Twin screw cruising motor yacht. 80 x 64 x 13.4 x 4.10. Built 1898. Engines new 1908; two 4-cylinder, 4-cycle "20th Century" gasoline motors, 30 H. P. each, giving speed of 10 knots. Gasoline capacity 650 gallons, giving large cruising radius. The boat was very thoroughly overhauled last Spring, and is in excellent condition. She is double timbered, and has bronze rudder, shafts and wheels. The interior finish is in quartered oak, and the accommodations consist of forecastle, pilot house, galley, stateroom, main cabin and two toilets. Sleeping accommodations for seven in owner's party; crew four. Exterior of cabin is finished in mahogany. There is a large upper deck, also after deck. Stack ventilates engine room. Very fully equipped, including gasoline launch and dinghy awnings, sails, anchors, cables, electric lights, and searchlight. Yacht is in commission, and special price will be considered if sold before laying up. Excellent boat for South, as bottom is coppered. Henry J. Gielow, 50 Broadway, New York.



NO. 500—FOR SALE.—Burgess-Lawley keel auxiliary schooner yacht, 62 x 46 x 13.4 x 9.5. Built 1890. 12 tons outside lead ballast. Flush deck and cockpit. Double stateroom; two transom berths in saloon. Two toilets. Sails in very good order, having had little use. Spars in excellent shape. Equipped with 18 H. P. Standard motor, new 1905, giving speed of 7 miles. Yacht is in splendid order, having had best of care. Very good inventory, most of it new 1906. Not in commission, but can be shown under power. Price very attractive if sold in near future. Henry J. Gielow, 50 Broadway, New York.

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NO. 2048—FOR SALE.—Successful modern racing and cruising sloop, 76 x 52 x 14.6 x 9.6. Best possible construction. Interior finish, white with mahogany trim. Sleeps two in double stateroom, and four in cabin. Well equipped and everything in first-class condition. Winner of many races. Can be bought right before going out of commission. Henry J. Gielow, 50 Broadway, New York.

NO. 1725—FOR SALE.—Fast cruising launch, 50 x 8 x 2.6. Launched November, 1907. Designed by Gielow, and built by Rockaway Motor Works. Finished in oak and mahogany. Full headroom, cabin 15 ft. 6 ins. long. Accommodates six. Two toilets and lavatory. Equipped with 50–70 H. P., 4 cylinder, 4 cycle, Mohler & DeGress motor, giving speed of 13 to 15 miles. Gasoline tank capacity 160 gals., water tank 40 gals. All necessary furnishings and fittings complete and new 1908. Cedar skiff on davits, awning over bridge and one over cockpit, new 1908. Construction is first-class; oak frames, cedar planking; all copper fastened. This boat is now in commission in this city, and the price is very attractive for immediate purchaser. Henry J. Gielow, 50 Broadway, New York.

FOR SALE at one-third its value, 82-ft. auxiliary schooner yacht in commission and in A1 condition, 60 H. P. engine, new. Address Room 64, 195 Broadway, New York.

NO. 1535—FOR SALE.—Keel cruising sloop, 39 ft. over all, 24 ft. water line, 11 ft. 6 ins. beam, 6 ft. draught, built 1899 by Greenport Basin and Construction Co. Oak frames, yellow pine planking, copper and galvanized fastenings. Outside ballast 6,000 lbs. lead. Full headroom, accommodations for four. Spars new 1907, 10 ft. tender, 2 anchors, lights, cushions, etc. Price very attractive. In sound and in good condition.

Henry J. Gie'ow, 50 Broadway, New York.

NO. 1516—FOR SALE.—Schooner-rigged cabin cruising launch. 40 x 36 x 9.6 x 2.6. Excellent order throughout. All finished in mahogany. Berths in pilot house and saloon sleeping four. Toilet room with tiled floor and galley with good sized ice box, stove, etc. Twelve horsepower "20th Century" gasoline engine, giving speed of 9 miles. Large gasoline capacity. Two berths in engine room. Complete cruising outfit. Located Washington, D. C. In commission. Offer wanted. Henry J. Gielow, 50 Broadway, New York.

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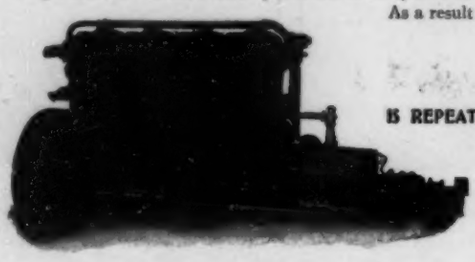

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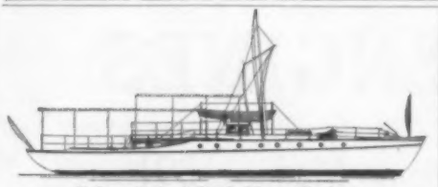

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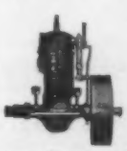

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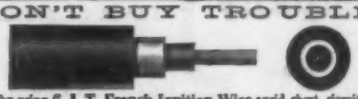

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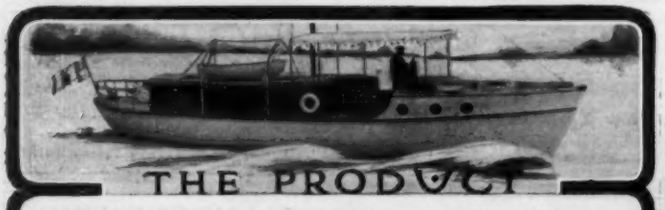

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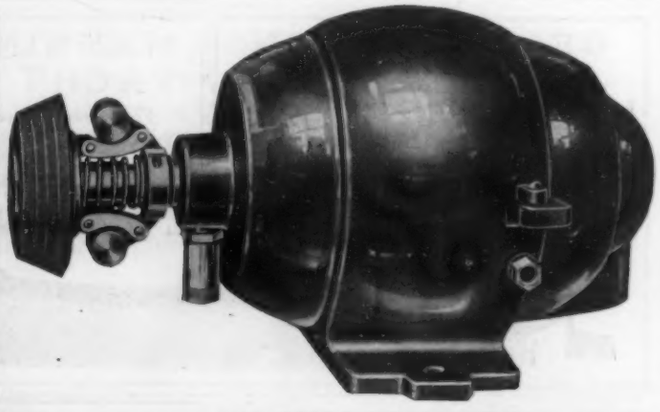

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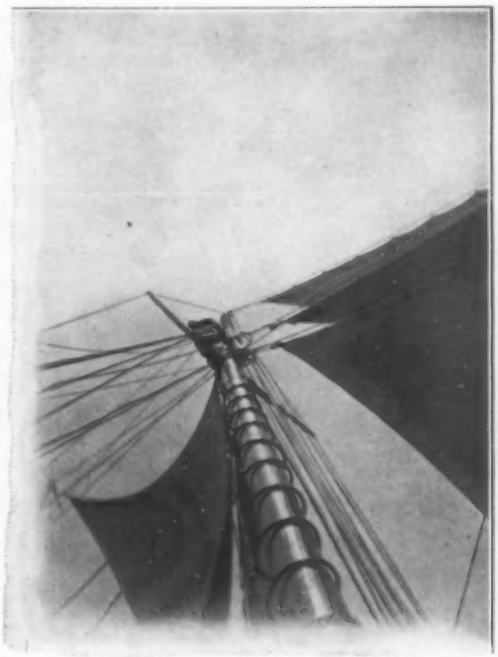
Contents—September, 1908



Cover Design: Painting by Arthur T. Merrick
Frontispiece: The Sloop of the Season, Dorello
Photograph by W. B. Jackson

THE INTERNATIONAL RACE FOR THE HARMSWORTH CUP - - - - - - ROBERT MEDILL MCBRIDE 129
Photographs by Edwin Levick, F. A. Walter and Brown Brothers

THE MACKINAC RACE - - - - - - J. M. HANDLEY 132
Photographs by R. H. Hall

THE MONTH IN YACHTING - - - - - - - - - - - 134
Photographs by Edwin Levick, James Burton and others

THE MARBLEHEAD-NEW ROCHELLE POWER BOAT RACE - - - - - - - - - - - - - - - - 137
From the Deck of Eronel, L. deB. Handley
On Board Kittrois, George S. Goldie
Photographs by the authors, V. M. Beolchi and others

STORMS AND STORM SIGNALS - - - C. H. CLAUDY 141
Photographs by the author, Prof. Henry of the Weather Bureau and others

SUCCESSFUL USE OF SPARK PLUG IGNITION - - - - - - - - HERBERT L. TOWLE 146

THE CHAMPION, DIXIE II., LEADING DEN ACROSS THE LINE IN INTERNATIONAL MOTOR BOAT REGATTA - 148–149
Photograph by Brown Brothers

AROUND THE HORN—THE LOG OF A SECOND MATE - - - - - - - - T. JENKINS HAINS 150

THE EVOLUTION OF THE ENGINE ROOM - - - - - - - - - - - - K. E. TREADWELL 152
Photographs by Edwin Levick and James F. Hughes & Company

WITH SKIPPER AND ENGINEER - - - - - - - - 155
Getting Home with a Crippled Engine
When the Mechanical Lubricator Fails
If a Valve Spring Breaks
When an Automatic Inlet Valve Stem Breaks

VIATOR, A NINETY-FOOT GASOLENE YACHT - - - - - 156
Photographs by N. L. Stebbins and W. B. Jackson

SIXTEEN-FOOT WATER LINE AUXILIARY SLOOP - - - 159

PELICAN, A TUNNEL STERN LAUNCH - - - - - - - 160

TRAHO, A FORTY-FOOT DAY BOAT - - - - - - - - 161

EDITORIAL - - - - - - - - - - - - - - - - - 162

MOTOR BOAT SUPPLEMENT - - - - - - - 164 and 166

LAWRENCE PERRY, Editor

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See "The Month in Yachting," page 134.

THE SLOOP OF THE SEASON—DORELLO A 39-FOOTER, WHICH HAS WON MANY CUPS IN NEW ENGLAND AND ON THE SOUND.

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YACHTING

VOLUME IV. NUMBER 3

September, 1908

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DIXIE II., SUCCESSFUL DEFENDER OF THE HARMSWORTH CUP. RUNNING UNDER HER MAXIMUM SPEED SHE DEFEATED HER BRITISH RIVAL, WOLSELEY-SIDDELEY. HER AVERAGE SPEED OVER THE COURSE WAS 27.75 KNOTS, EQUIVALENT TO 32.00 MILES.

The International Race for the Harmsworth Cup

By ROBERT MEDILL McBRIDE

Photographs by Edwin Levick, F. A. Walter and Brown Bros.

IN a spectacular race Dixie II. crossed the line 49 seconds ahead of Wolseley-Siddeley, the Duke of Westminster's British challenger, in the fifth international race for the Harmsworth cup, held on Huntington Bay, L. I., on Monday, August 3, over a 30-mile course. This cup, it will be remembered, was won by Commodore Schroeder's Dixie in Southampton waters, England, last year. By her victory, Dixie's swift successor keeps the prize in this country and places the United States before all nations in the production of time-killing power yachts.

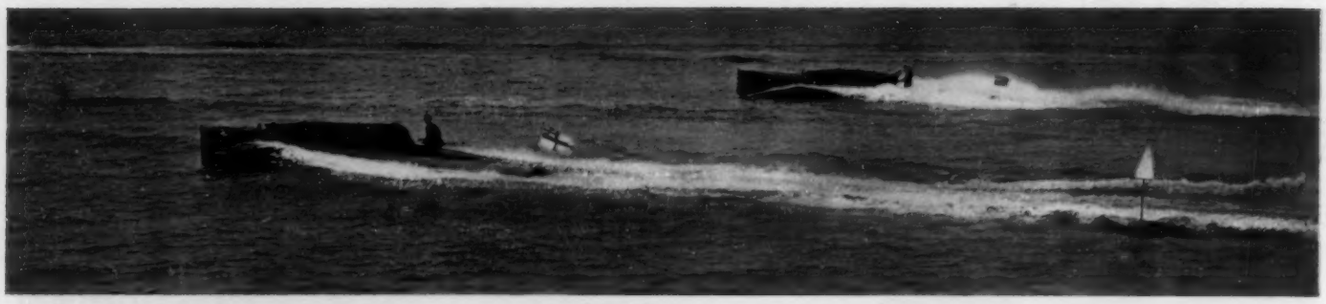
The race was run under the British rule of no restriction, save a provision that the hull length be under 12 metres, equivalent to 39.4 feet. There was therefore no time allowance given. It was a case of boat for boat—the fastest time over the course.

The British challengers for the trophy were Wolseley-Siddeley, the fastest motor boat of her size in the world and a winner at Monaco, and Lord Howard de Walden's Daimler II. The former boat was engined with two 8-cylinder motors, which developed 416 hp. Daimler II., with the same length, was provided with three 8-cylinder motors, which produced 500 hp. Her propulsion was accomplished by triple screws. The American boats were Dixie II., which was, like all the other contestants, excepting Den, built to the top of the class and measured 12 metres, and was provided with a 200-hp. motor; Den, a little craft of 32-foot length and a 4-cylinder motor, capable of developing 80 hp., owned by Commodore J. H. Hoadley, of the Motor Boat Club of America; and U. S. A., formerly Irene, owned by A. J. Shepperd. She was equipped with two 4-cylinder engines that developed 200 hp.

The course was three times around a triangle of ten nautical miles to the leg, laid out as follows: Start from a line at the head of Huntington Bay, north by east ¼ east, to a mark boat 3 13/16 miles. A quarter of a mile from this, northwest ¼ north, was the lump buoy, another turning mark. These two marks were placed close together, in order to make the turn a gradual one for the racers. Then they went west ½ south 1⅞ miles, and again there were two marks placed a quarter of a mile apart, and the last leg was south by east ¼ east, 3⅝ miles. The committee's tug and two mark boats made another gradual turn at the home mark.

DEN, THE SMALLEST COMPETITOR. SHE WAS COMPLETELY OUTCLASSED, FINISHING NEARLY SIXTEEN MINUTES AFTER THE LEADERS. HER SPEED OVER THE COURSE WAS 22.25 KNOTS, OR 25.59 STATUTE MILES.

Wolseley-Siddeley was handled by Noel M. Robbins, Daimler II. by Dr. George Alfred Fentmian, the representatives of their owners. Capt. S. B. Pearce was at the wheel of Dixie II., and Albert Rappuhn was the engineer—the same crew that brought Dixie I. to victory last year. There were no French challengers entered. France would have been represented had the Motor Boat Club of America, under whose



DAIMLER II. LEADING WOLSELEY-SIDDELEY ACROSS THE LINE AT THE START. THE WAKE OF DIXIE AND DEN CAN BE SEEN. THEY HAD A GOOD START OF THE ENGLISH BOATS.

auspices the race was run, granted a few weeks' postponement.

In contrast to the nasty sea running before a brisk nor'easter, which prevented the race on Saturday, August 1, hardly a breath stirred the course when the preparatory signal was given at three o'clock on Monday. At that time a large fleet had assembled, and was lined up along the course. The contesting boats were darting here and there, limbering up for the start, getting in readiness to dash across the line in a burst of speed when the starting whistle sounded. On the committee boat the minutes were counted off, and when the last of the five came, quarter minutes were called—45 seconds, 30 seconds, 15 seconds—the whistle blew! It seemed as though the boats themselves heard the signal, for with a bound they were off for the line. No spectacle could have been more thrilling than that of these vast powered boats, fairly leaping out of the water in a rush for the lead, almost completely obscuring their after hulls in spray.

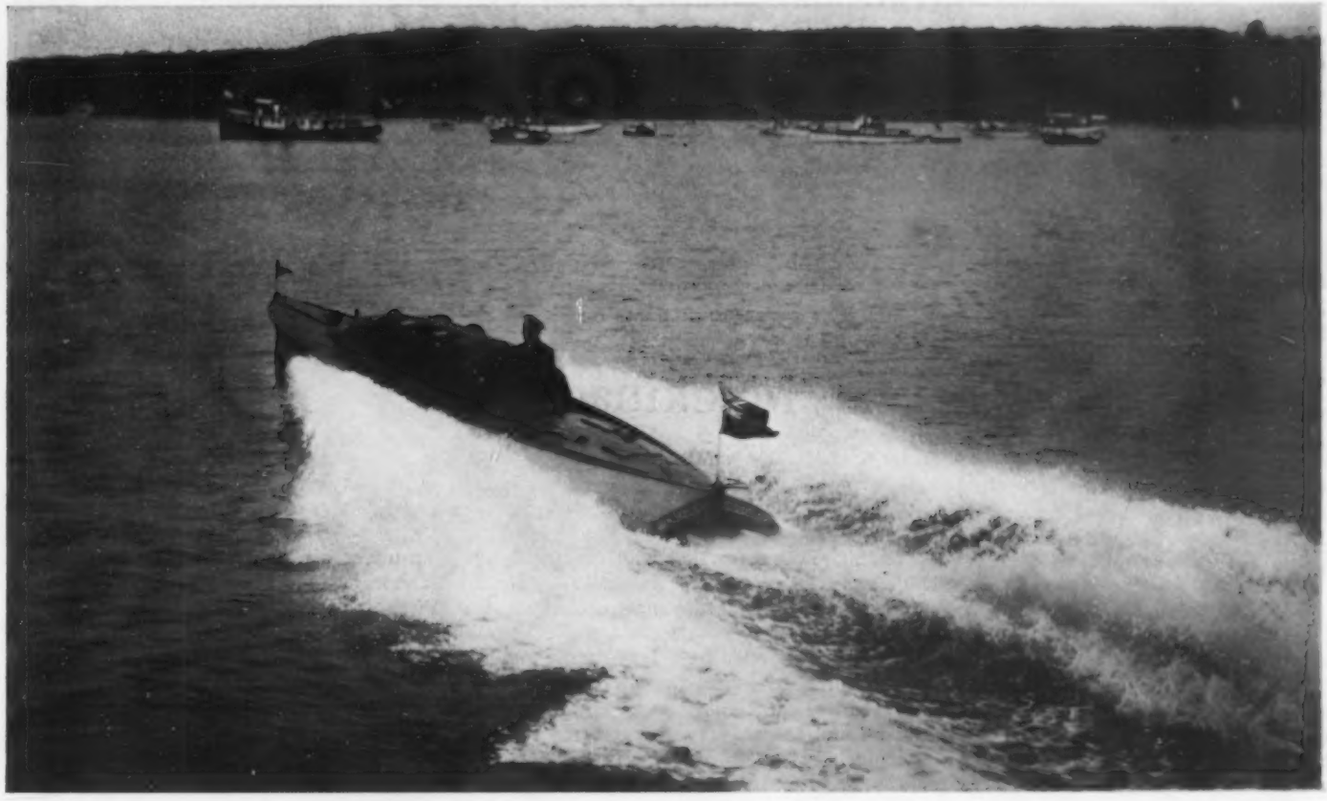
DIXIE II. ALONGSIDE THE FLOAT BEFORE THE START. AN IDEA OF HER POWERFUL MODEL MAY BE GAINED FROM THIS PICTURE. THE MUFFLERS, FROM WHICH ESCAPING FUMES NEARLY ASPHYXIATED HER ENGINEER, CAN BE SEEN ON DECK ON EITHER SIDE AMIDSHIPS.

Dixie, which had remained motionless near the line until the last moment, bounded forward, crossing first, with the plucky little Den almost abreast, and 9 seconds ahead of Daimler II. Following 2 seconds later came Wolseley-Siddeley, and well astern, 41 seconds after the signal, U. S. A. In a moment almost, it seemed, only five white streaks could be seen in the distance, for the contestants were traveling at the speed of an express train: a 10-mile course—it seemed a long time to wait, but then one forgot the rapidity of these flyers.

For a brief space of 15 minutes speculation was rife as to which was leading. In the distance two specks were seen approaching, with white streaks in their wake. Down came the leaders, tearing through the water, hurling it right and left in a mad rush for the turn. Dixie led, and a cheer went up as she swept round the mark, careening dangerously to port. She dashed past the committee boat a few seconds later at 3.26.45, exactly 21 minutes and 15 seconds after the start. Closely pursuing in a smother of foam was Wolseley-Siddeley and her time, as she almost grazed the boat, was 3.27.12. On this round Dixie had outfooted Wolseley by 37 seconds and, on actual time, 26 seconds, as she had started 12 seconds ahead. At this time U. S. A. and Den were just coming into sight, completely outclassed. It was several minutes before they made the turn. Daimler II. not appearing among the leaders wonder was expressed, but before long she was seen limping slowly back inside the course, and out of the race. When leading her British rival by a few lengths and 20 seconds astern of Dixie, this giant of high power had been disabled by the breaking of a connecting rod, and her starboard engine had been put out of commission. Then the honors of England rested with Wolseley-Siddeley, and she settled herself for the task.

With the first round the race had really only begun. Away again they flew, and at the second turn Dixie still led, but the distance between the two boats was reduced. Wolseley was doing her best. The gap was lessened by 21 seconds, and she was only 16 seconds behind at the second turn.

DAIMLER II., WHICH BROKE DOWN IN THE FIRST ROUND WHEN LEADING HER BRITISH RIVAL AND TWENTY SECONDS ASTERN OF DIXIE. SHE IS A TRIPLE SCREW BOAT WITH ENGINES OF 500 HP.



WOLSELEY-SIDDELEY, THE DUKE OF WESTMINSTER'S BRITISH CHALLENGER, DASHING PAST THE COMMITTEE BOAT ON THE SECOND ROUND. SHE FINISHED FORTY-NINE SECONDS BEHIND DIXIE II., THEREBY FAILING TO LIFT THE CUP. HER AVERAGE SPEED OVER THE THIRTY-KNOT COURSE WAS 27.35 KNOTS, OR 31.05 MILES.

Things began to look serious and some began to fear, but Dixie was getting her second wind, and get it she did. There were 10 miles more, and Captain Pearce opened her up a bit for the homestretch. She justified the faith of her backers. At the western end of the triangle she had increased the lead to 36 seconds. But here a catastrophe occurred that might have cost Dixie the race. As she flew around this mark, Albert Rappuhn, the engineer, squatting under the protection of he hood, with his hand on the throttle, fell forward senseless from the terrible heat and from the exhaust gas from the muffler, which was so located on the deck directly above the engines and just forward of the engineer that he could not avoid the fumes. The British rules, under which the race was run, required the use of mufflers. The fact that the American racing rules provide for no such conditions was the reason for a not more carefully devised plan for locating the device on Dixie where they would be out of the way.

When Engineer Rappuhn collapsed the entire control of the boat devolved upon Captain Pearce at the wheel. He was equal to the emergency and brought his charge tearing down the remaining four miles of the course at a pace that never wavered, victoriously crossing the finish line amid a tumultuous greeting of hundreds of pleasure craft 49 seconds ahead of his rival.

As Dixie swept over the line, Captain Pearce was steering with

(*Continued on page 170.*)

U. S. A., FORMERLY IRENE, A DEFENDER, LIKE DEN, THAT COULD HAVE WON ONLY IN THE EVENT OF ALL OTHERS BREAKING DOWN. AVERAGE SPEED, 23.9 KNOTS, OR 27.60 MILES.

THE FLEET OF SPECTATORS, INCLUDING EVERY TYPE AND SIZE OF CRAFT, LINED ALONG THE COURSE AT THE FINISH. DIXIE HAS JUST FINISHED.

WORKING UP TO THE LINE FOR THE START OF THE 300-MILE RACE FROM CHICAGO TO MACKINAC ON LAKE MICHIGAN.

The Mackinac Race

By J. M. HANDLEY

Photographs by R. H. Hall

WILLIAM HALE THOMPSON'S Valmore came, was seen and ran away with the fifth annual renewal of the Mackinac race of the Chicago Yacht Club. Indeed, from the very first, when she sailed out from under the lee of the Vencedor and, going about on the starboard tack, forced the crack sloop of the great lakes about, it was a foregone conclusion that the big new two-sticker of the president of the Illinois Athletic Club would win—barring accidents. And she won so impressively that one can do nothing but give her credit for being a superior boat and her owner for sailing a race of rare, good judgment.

July 25, the starting day of the 331-mile windjamming expedition, looked unpromising, but by noon the wind had settled steadily in the northeasterly quarter, and by the time the preparatory gun barked its warning signal there was a good lump of sea running outside the breakwater. The fleet offered only nine starters, four schooners, including Valmore, Hawthorne, Alice and Nomad; three yawls, Arcadia, Nahma, of Detroit, and Naiad; and two sloops, the twice winner Vencedor, flagship of the Chicago Athletic Association Yachtsmen, and the little thirty-five footer Illinois. But they represented the cream of the fleet and the outlook was for a bully race in all classes.

By starting time the contestants had worked well out to leeward of the line off the breakwater, with club topsails set and the wash running up through the lee scuppers. Valmore was out early and had a commanding position, which she was forced to abandon, to avoid running down the little Nahma, so when the start came, Illinois nosed over the line first, followed by Arcadia and Vencedor, with Valmore tucked under her lee. All went over within a few seconds of gunfire on the starboard tack, standing for the inside end of the breakwater of the harbor of refuge. Vencedor was first to go about and stood east on the port tack, holding out into the lake for a fresher wind. There was a bit of jockeying with the Valmore, and skipper McCullough, of the sloop, was forced to give way to the big schooner, which, working up from under his lee, forced him to go about in order to clear. Valmore held on her course, with sheets flattened down, for Wind Point, looking for a better shift of wind before heading on the course for Point Betsy. Illinois, Hawthorne and the rest of the fleet, barring Vencedor, held to Valmore's heels, but she was devouring the space at real racing speed, and the gap grew wider every minute. As the boats cleared the backwind from Chicago and got free of the big buildings, the wind grew steadier and stiffer, and all bowled merrily along with a big bone in their teeth. On Valmore everything was made snug and the inevitable weather horoscope was cast. The indications from the meteorological bureau and the weatherwise promised easterly winds swinging to the southward, and it was decided to hold on the west shore until well off Wind Point, where the changes were most likely to be found. Incidentally, if the wind dropped in the night, the inevitable shore breeze that is looked for on the west side of the lake would help the boats along, as the breeze is always freshest near the shore. Vencedor, which had struck out for the east coast last season, did not figure the race the same way, and as it had profited by its experience of the past, Commodore Tramel and his advisers held a course to the east, which did not give them much better position, because of the direction of the wind, but which would guarantee them smooth waters and a distinct advantage, if the wind swung into the southeast the next day, under the lee of the Michigan shore. As it worked out, the judgment of Thompson, Peare and the other members of the advisory board on the Valmore proved best. Farther north, the boats worked the fresher the breeze proved, and the Valmore was scudding along with her rail well down, her immense club topsail and brand-new set of canvas drawing like a new flue under forced draught. From Chicago to Kenosha light the run was made in a little over three hours, a thirteen-knot clip, and that was going some, as "Billy" Thompson remarked when the steward announced dinner and the lifesavers at Kenosha dipped their ensign in a signal of

VALMORE, THE EASTERN-BUILT SCHOONER, SAILED FROM NEW LONDON TO CHICAGO AND LATER WON THE MACKINAC RACE.

greeting. The same course was held to Wind Point, the wind hauling a bit to the eastward and allowing the starting of the sheets, just enough to ease her off and give her a good full. Dinner was a merry meal, and the cigars and coffee—for the chef did not omit any of the niceties of the table—had gone the rounds, when Racine light flashed over the port bows and passing outside the light on Racine reef, a course was laid for Point Betsy, with a cracking breeze that kept the rigging squeaking and singing, and drove the water over the bows in avalanches. Past Wind Point a still more southerly wind was found, the sheets were started a bit more and the maintopmast staysail set. With the added canvas, and she was carrying all but balloon canvas, she raced ahead at a terrific speed. The run through the night was a revelation to the amateur sailors who made up half the crew, and who had never had a taste of such quality before. Sleep seemed out of the question, in spite of the hard work of the day, but at last the port watch was mustered below, and the starboard watch took charge of the boat. From about eight o'clock to midnight not a sheet was touched, and then a slight shift in the wind enabled the easing off of the sheets some more, and the big boat gathered still more speed until she seemed to be flying through the night. As the first gray streaks of approaching dawn blanched the east, the lights of Ludington flashed into view and by 3 o'clock the east coast became faintly visible against the windswept horizon. At 3 o'clock Valmore was off Great Point Sable, having logged in the neighborhood of 165 miles in 12 hours; and when the calculations were announced, there was a cheer went up from the retiring watch and the new set that came on deck, for it was sure enough a record run. Valmore had logged at the rate of well over 13 knots for 12 consecutive hours. After that the wind began to drop, and by 9 o'clock Sunday morning it had shifted still further into the south until it was blowing at the rate of perhaps 8 or 9 knots. Balloon canvas was run up until the big boat was under a perfect cloud of beautiful new Egyptian duck that had never seen the sunshine before. The run up the east coast was uneventful. None of the other yachts had been in sight for many hours. Indeed, the last one to be seen—the Hawthorne—had dropped under the horizon before nightfall the day before. The light breeze held fairly true all day Sunday, but there was not much speed behind it, and Valmore, standing well out in the lake, did not get a chance to speak any of the shore stations, from which the outcome of the race was watched. Passing Point Betsy, the wind dropped until it barely moved the big boat, and it was late afternoon before she was off Sleeping Bear Point, showing the phenomenal record of 220 miles in 20 hours. The passage between the mainland and the Manitous has always been the Jonah of the Mackinac race, and it proved equal to its reputation. In one race nine boats were becalmed in this passage for 12 hours, and Valmore drifted idly into the doldrums at nightfall, losing all headway when off the gas buoy on the south end of the north Manitou. Here she lay most of the night, with the water like glass, and all the crew could do was to sit and watch the steady stream of great freighters go noisily by, leaving a huge, black plume of smoke behind them for miles. Deputy Skipper Peare managed to scratch a bit of wind off the mast by 2 o'clock in the morning. It was a nice little breeze from over the hilltops of the shore, and the big club topsail, that had never come down since the race started, filled out impetuously, and carried the mainsail along with it. Slowly the gas buoy slipped off under the lee quarter and once more she was alive, very much alive. A course was set for Skilligalee light, and the big balloon jib and balloon maintopmast staysail went up to get all there was of it. With scarcely a ripple she slipped out of the harrowing doldrums and was soon footing it down towards the goal, with every stitch of canvas drawing and a sweet little breeze foaming the water under the spoonbill. It was not much of a wind, but it held true and steady from the south-southeast all morning, and by 11 o'clock Skilligalee, the vernacular for Isle Aux Gallets, the old French name for the reef, was across the starboard quarter, and the run through the dangerous shoals for Waugeshance light was on. The 14-mile run was made in a little over two hours, and as Valmore jibed around the big lighthouse that marks the turn into the straights, the lightkeeper megaphoned that Thompson's boat was the first one to round, and he unwittingly paraphrased a saying gone down into yachting history when he added more emphatically than grammatically: "You're first and there ain't no second."

AFTER THE START. THE YACHTS, READING FROM LEFT TO RIGHT, ARE HAWTHORNE, VALMORE, ARCADIA AND VENCEDOR.

After jibing around the tower light sheets were eased way out, spinnaker and balloon canvas were set, and Valmore was on the last lap of her long trip, with the finishing line only 22 miles away. Those 22 miles were the longest of the whole journey unless the miles in the Manitou passage are counted, and at that time they had faded into oblivion. Slowly she drifted, the island growing bigger and bigger hour by hour, until the white front of the Grand Hotel, its hundred window panes flashing in the sinking sun, could be seen distinctly in tiny squares of fire. Every rag she could carry was hoisted, and oh! the fervent prayers that went up for a breeze, just a little breeze, just a mite of a breeze. Past the can buoy and on for Round Point light she went, with a lad in the forward rigging handling the lead, for Valmore draws eleven feet and some inches, and there are plenty of high spots in this stretch of rocky ledges. Rounding in to make the finishing line just after the sun had set and the lights began to gleam from shore, the lookout called "two fathoms," and the huge fabric of canvas shivered, as a cool puff of balsam-scented air drifted over Round Island. The skipper yelled out, "'Ware a jibe!" Slowly, gently, she made a standing jibe, and just then the gun spoke from shore and a faint yell came across the water—the race was over, Valmore had won.

Little Illinois, through her big time allowance, won second prize in the race, and third place went to Hawthorne, one of the staunchest, most reliable and best sailed yachts out of this harbor. Vencedor dropped into fourth place through having to give time allowance to Illinois, but as Commodore Tramel of the big finkeeler said at the banquet: "She has won two Mackinac races, and she is still in the hunt, and we are not hogs. Here's to Valmore, the best boat." And the toast was drunk standing.

MEASURING A MARBLEHEAD RACER. AFTER THE EVENT DISSATISFACTION WAS EXPRESSED OVER, THE MEANS ADOPTED BY SOME ENGINEERS TO CONCEAL THE NUMBER OF REVOLUTIONS OF WHICH THE ENGINE WAS CAPABLE WHEN DRIVEN AT FULL SPEED.

The Month in Yachting

Photographs by Edwin Levick, James Burton and Others

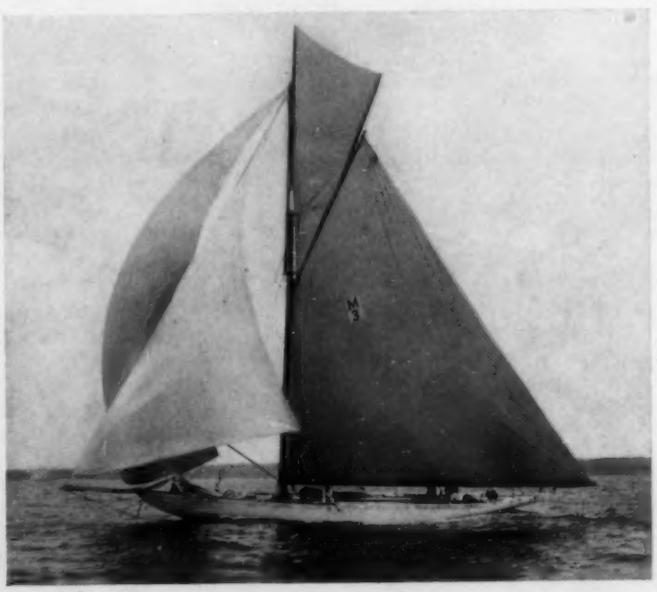
A MAN who participated in the Marblehead-New Rochelle power-yacht race, in complaining to me about the methods utilized to determine ratings, said that in that race he had been "fool enough" to allow his engine to turn at the greatest number of revolutions, whereas other entrants had devised a scheme whereby the number of revolutions was reduced even with the lever at full notch. This had been done, he said, by pouring a large quantity of gasolene in the carburetor, which resulted in a great deal of smoke and noise, but, nevertheless, prevented the engine from doing everything that it was capable of doing.

"They did not tell me of the device in time," said my informant, "and consequently I was rated at the greatest number of revolutions of which my engine was capable."

Now isn't this a pretty mess! One would think that yachtsmen would be sufficiently interested in the good of the sport to go ahead and try to win events on their merits. But no. Someone with devilishly clever mind is always seeking for some subterfuge by which rules may be "beaten." Of course, the only thing to do now is to devise some way of putting a stop to this practice. I submit the problem to all mechanical geniuses who have the good of motor boating at heart.

It is the same way in sailing. An unscrupulous yacht owner spends his time seeking to evade the measurement rule, a designer endeavors to succeed by studying rules to the end that they may be violated in spirit if not in letter, and so it goes. Happily the great majority of men having to do with yachts go in for the sport with an eye to the larger good of the game, as well as to their own.

The triumphant visit of the down-east sloop Dorello to the Sound should in the nature of things cause some thought up in Bristol. It would appear that her designer, George Owen, of Winthrop, Mass., is beginning to come into his own, and certainly the way the boat showed her heels to the craft of her class in the Eastern Yacht Club regattas must be generally regarded as an indication that the art of turning out swift boats is not confined to the Herreshoffs. Her appearance on the Sound, following her successful career off Marblehead, was attended by keen interest, and there were not many nautical wiseacres who were willing to predict that against Mimosa III. she would continue her winning course.



GARDENIA, THE 40-FOOT SLOOP DESIGNED BY WILLIAM GARDNER, WHOSE OWNER, LEO HERZIG, RACED AGAINST DORWINA, A LARGER SLOOP, ON TERMS THAT COMMEND THEMSELVES TO LOVERS OF GOOD SPORTSMANSHIP.

But she did. She appeared at the first day of Larchmont Race Week, July 18, and, racing against the Wainwright sloop, defeated her by over seven minutes, this in spite of allowing Mimosa eleven minutes over a thirty-mile course. Throughout the week, in fact, she showed that she was a sloop of wonderful speeding qualities, and if she is ever hauled out in the vicinity of

any Sound port she will attract more attention than a new-fallen meteorite. Dorello is 58.5 feet over all, 39 feet on the water line and 7.6 feet draft. She is owned by George L. Batchelder, of Boston, Eastern Yacht Club, to whom should go the thanks of every man who is interested in the success of the present yachting season. Both the Larchmont and New York clubs are thinking of building sloops in this class.

Mr. Batchelder naturally did not desert New England for his health or for any purpose other than the demonstration that the art of Burgess and other New England designers is not lost, but in this might have been read a sportsmanlike purpose, and he deserved the cups he won and many more.

Speaking of New England brings to mind the fact that there was great racing in progress between Avenger and Humma, the two Class K sloops on the annual cruise of the Eastern Yacht Club to Bar Harbor, Me., two weeks ago, with honors somewhat in favor of Avenger. Avenger was regarded as somewhat of a black sheep in the New York Yacht Club regattas last year. As is generally known she was built and designed by the Herreshoffs to shave the bottom of her class, after the Bristol wizards had produced Istalena, Winsome and Aurora, which rated at the top of the fifty-seven-foot division. The result last season was that Avenger received so great an allowance from the other three boats of the class as to leave them little or no chance of winning.

Naturally the owners of the larger sloops did not accept their defeats in the most gracious spirit. When the prospects for the present season were under consideration there was some question as to how the matter would be adjusted. It was vitally necessary that something be done, and the most important element in that "something" must be tact. It may be said that tact figured prominently in the arrangement as finally devised. In other words, the two sloops Istalena and Aurora were altered in trim so as to rate out of their class and in Class J. It is to be assumed that this would not have been done had the sixty-footer Effort been in commission, but she was not and her owner had no intention of having her out this summer. Thus the way was clear.

In the New York Yacht Club regattas Istalena and Aurora raced together in a "Special Class K," which was really Class J, while Avenger was allowed to sail in the regular K class. Prizes were offered in each and so there was no ground for complaint on the part of anyone. It was a clever move, and congratulations to those who thought of it are in order. The only drawback would have been the sudden decision to place Effort in commission. I wonder what would have happened then. Here surely would have been fresh opportunity for the nimble mind which worked out the solution of the Class K problem in the primary instance. I understand now, however, that the two big sloops have gone back into their regular rating.

A 30-FOOT POWER TENDER, NOW UTILIZED AS A CAPTAIN'S GIG ON THE BATTLESHIP MISSISSIPPI. FOR YEARS THE NAVY CLUNG TO THE STEAM LAUNCH, AND THE DEPARTURE IN FAVOR OF GASOLENE IS REGARDED AS SIGNIFICANT.

Speaking of Istalena and Aurora calls to mind the fact that there are no gamer or more sportsmanlike yachtsmen in the world than George M. Pynchon and Commodore Cornelius Vanderbilt, the respective owners of the two sloops. This season, when the Eastern outlook seemed poor indeed, and when the expense involved in racing a large yacht was a formidable proposition for any man whose interests lie largely in Wall Street to face, Istalena and Aurora came out primarily that the season here might be saved. And no boats have contributed so largely to the success of Eastern regattas as these two. Wherever there has been a race there have been found the two "fighting fifty-seven" and always with a Corinthian at the helm. On Aurora it has been Commodore Vanderbilt, or Butler Duncan, or one of the Maxwells, while Mr. Pynchon has had the helm of Istalena in almost all, if not all, of her races. When Mr. Pynchon sailed out on Lake Michigan, in former years, he was known as a capable and wholehearted sportsman, and his old sloop is now sailed and cherished by a clever Chicago yachtsman.

The racing between Istalena and Aurora this year has resulted in a slight preponderance of victories for the Vanderbilt sloop, but the Pynchon boat has won a satisfactory share of the regattas. Boat for boat, and in a steady, true wind, Aurora impresses one as being a trifle the swifter of the two, but the skipper of the rival single-sticker has shown rare facility in making the most of opportunities.

Larchmont Race Week passed off successfully, as it always does. Considering the dull season, the record of 540 entries, averaging ninety yachts of various classes for each of the six days on which the regattas were sailed, was nothing less than wonderful. Larchmont races seem wonderfully attractive for yachtsmen, however affiliated, or wherever located, and the quality of the yachts entered was the highest that Eastern waters between Boston and Philadelphia could produce.

Seneca, Addison G. Hanan's twenty-seven-foot sloop, which won the Canada Cup over the Payne challenger Adele last year, carried off the lion's share of the honors, defeating Mimosa III., on time allowance, on all days but one. Dorello defeated her on the last day of the week of racing in spite of the sixteen minutes which she allowed the Hanan boat, but conditions on that day were in favor of the Boston sloop. Istalena and Aurora each won three races, and Gardenia won four out of five against Dorwina, a larger sloop. Mr. Herzig, of Gardenia, made a racing agreement with E. C. Ray, owner of Dorwina, which was in perfect consonance with the sportsmanlike spirit which characterized the entire six days racing. It was arranged between the two that the boats should race on even terms, boat for boat, until Dorwina won, and then on half allowance until Gardenia won. That is to say, Gardenia, the smaller boat, was to race Dorwina boat for boat until the larger sloop won. Thereafter Gardenia was to exact only one-half of the allowance due her until she won.

The six days' work of the Larchmont Yacht Club's regatta

committee may be unreservedly commended as an example of general efficiency. Going on the ground that it was far better to start the racers, provided there was sufficient wind to blow them over the line, rather than to wait hour after hour for a whole sail breeze, there was only one occasion when the start was delayed as long as half an hour. The wisdom of getting the yachts under way, even with a light wind, was made manifest later in the day when on the second round the yachts caught the freshening breezes of mid-afternoon. It is the policy of some clubs racing on the Sound to hold the racers until the afternoon breeze put in an appearance, with the result that regattas are finished as late as eight o'clock. The Larchmont committee never hesitated to end a race at the end of the completion of a certain stage of the contest if conditions seemed to justify that action, and all in all the impression every day was that the events were in the hands of men who knew their business.

As for the week ashore nothing more need be said than that all the good fellowship and genial manners for which the club is famous was at all times in evidence. The Rocking Chair fleet was anchored at its station on the Larchmont bar early and late, and lived up to its reputation, which, so far as wit, geniality, capacity and anecdotal resource are concerned, is unrivaled.

The following correspondence may well be commended to yachtsmen throughout the country, but more especially to the pleasure sailors of the Great Lakes, where the merchant skippers, on the ground that might makes right, navigate the courses between Chicago and Buffalo with a high hand. On Erie, Michigan, Huron or Superior the yachtsman, whatever the situation, must make it his duty to give cargo carriers a wide berth, the price of neglect to do so being a wrecked boat and probable drowning. Last year, on the Mackinac race, the crew of one of the racing schooners saw a great ore boat approaching under full headway. Apparently no man was at the helm; and as the schooner was becalmed, it may be imagined that the Chicago Corinthians did not lightly regard their plight. All, in fact, were preparing to go overboard when the steamship, which had approached to within two hundred feet, swerved to one side, the man at the wheel, who had been crouching behind the rail, sprang to his feet, and as the vessel shot past, the captain and crew, who suddenly appeared at the rail, hurled all sorts of jocular insults at the yachtsmen. A few decided stands such as that exhibited in the letters printed below would do much to impress captains of freight vessels that men who sail for pleasure have some rights upon the navigable waters of this country. The correspondence explains itself:

AVENGER, SHE WON THE ASTOR CUP IN 1907 AND REPEATED HER VICTORY THIS YEAR. RATING AT THE BOTTOM OF THE 57-FOOT CLASS SHE HAS CAUSED MUCH TROUBLE, BECAUSE OF THE FACT THAT OTHER SLOOPS OF THE K DIVISION HAVE TO ALLOW HER EXCESSIVE TIME.

"The United States Steamboat Inspection Service, United States Custom House, New York:

"NEW YORK, July 8, 1908.

"Gentlemen—I beg to call your attention to the action of the steamboat John Sylvester, on July 4. On that day the Brooklyn Yacht Club conducted a race in which nineteen sailing yachts of different character and dimensions started in Gravesend Bay at 10.30 A. M.

"The wind was a little east of south and all boats were close hauled on the port tack considerably west of Norton's Point shortly after the start, when the steamboat John Sylvester, coming down the bay, deliberately sailed right in the midst of the fleet, with no apparently slackened speed.

"The schooner yacht Uncas, considering her rights, stood on her course, but the Sylvester not keeping clear, the Uncas was compelled to luff and shake in the wind for quite some time in order to avoid a collision.

"There was no question of keeping clear of the channel or anything but a total disregard of rights on the part of the captain of the Sylvester, who should be called to account.

"The Coney Island steamboats generally do not pay the slightest regard to the rules of the road where sailing yachts are concerned, no matter at what point they are met. There are one or two exceptions, but yachts with rights are invariably inconvenienced and endangered by the tactics of these boats.

"I would much appreciate if you kindly advise what action can or will be taken in the specific case mentioned above.

"Yours very truly,
"B. V. R. SPEIDEL,
"Pres. Y. R. A. of G. B."

"Department Commerce and Labor,
Steamboat Insp. Service,
"Office of Local Inspectors, Custom House,
NEW YORK, July 11, 1908.

"Mr. B. V. R. Speidel, Pres. Y. R. A. of G. B., care of Bensonhurst Y. C., Bensonhurst, L. I., N. Y.:

"Sir—Again referring to our letter of the 9th in reply to yours of the 8th, relative to steamer John Sylvester interfering with the yacht race in Gravesend Bay on July 4, we took the matter up with the master of said steamer and have his reply before us, which he brought in person to this office.

"He states that he did not think the yachts had started on a race until his boat was in such a position as to make it impossible for him to turn about; that he slackened speed, stopped and did all he could to keep clear of the yachts, of which there were a very large number, and it was very difficult to keep clear of all of them; but he did all that was possible under the circumstances; and that the cause of making the Uncas luff to keep clear was from the necessity of his having to stop to let some of the other small boats cross his bow.

"We have admonished him to use all due caution with reference to the navigation of his vessel, and he promises to make every effort not to interfere with sailing craft in your waters.

"We also took the matter up with the Iron Steamboat Company and are to-day in receipt of a reply from the president thanking us for calling his attention to the obligation which rests with them, to extend every possible courtesy to other craft in the harbor. He also states that the matter will be taken up with each individual master of the Iron Steamboats.

"Trusting that you may have no further cause for complaint,

"Respectfully,
"HENRY M. SEELEY,
"J. L. CRONE,
"Local Inspectors."

LASHING DOWN A DINGHY IN A GALE.

THE COCKPIT A CHART ROOM. PRICKING OFF THE COURSE.

OFF THE CAPE. ILOILO HAS TURNED BACK.

SLEEPING WITH FACE TO THE ENEMY.

The Marblehead—New Rochelle Power Boat Race

DANGERS AND HARDSHIPS ALIKE WERE FACED, BUT IT WAS ALL IN THE INTEREST OF SPORT, AND THE RESULTS WERE WELL WORTH WHILE

By L. DE B. HANDLEY AND GEORGE S. GOLDIE

Photographs by the authors, V. M. Beolchi and others

THE clubs that stood sponsors to the Marblehead-New Rochelle power boat race of 1908 had in view the development of a small type of ocean-going power boat, and wished to prove their contention that craft of any size could safely brave the open, if properly built and equipped. They have reason to be satisfied with the results.

FROM THE DECK OF ERONEL.

L. DE B. HANDLEY.

When I boarded Eronel, Rear Commodore Samuel Cochrane's 23-rater off the Boston Yacht Club, at Marblehead, everything was in readiness. The crew was composed of Mr. Cochrane, captain and owner, who reserved the privilege of acting as engineer and mechanician; Mrs. Cochrane, who shipped as passenger, but proved a most able sea-woman, taking her trick at the wheel with the others; Joseph Briggs, of the Atlantic Yacht Club, who was elected official log keeper; and George Peppard, who, with the writer, was entrusted with the navigating of the boat.

At 10 o'clock the warning gun was fired, at 10.05 the preparatory, and five minutes later, as the signal to start boomed across the bay, the fleet crossed the line, well bunched. The larger boats jumped to the front at once, Chud, Irene II. and Picaroon leading, while the smaller craft slowly fell back and gradually formed a procession as the miles were covered.

The sea was calm, a bright sun shone, and the few fleecy clouds that hung low on the horizon gave no inkling of the weather we were soon to run into.

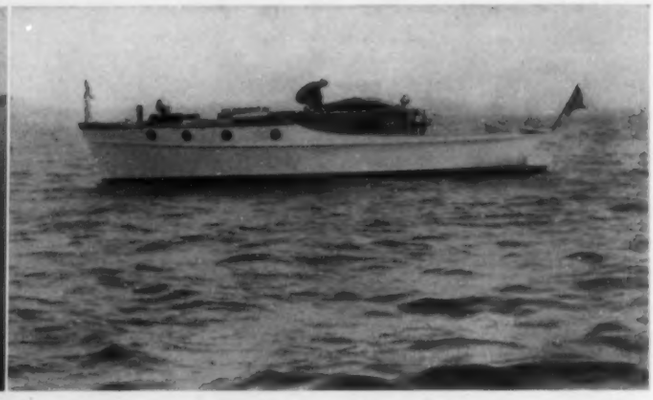
IRENE II. THE GAME LITTLE BERMUDA RACER. SHE WON THE MARBLEHEAD RACE IN 27.03.26 CORRECTED TIME.

Eronel was receiving allowance from the entire fleet, having the lowest rating, and, of course, we expected to drop to the rear from the very start. To our surprise and pleasure we found instead that two of the boats began to fall back, and that we held two more easily.

We rounded Cape Cod without mishaps, and running close inshore found comparative smooth water and protection from the fresh westerly breeze which had sprung up. Mr. Fansler's Iloilo had been close on our heels until here, and followed us in, but off Highland Light she began to fall back and was soon hull down. We heard later that her oil had proved unsatisfactory and that she had to run into Provincetown for a fresh supply. She then resumed her journey and finished most creditably.

We picked up Chud at anchor a few miles further and passed alongside. Her engine had broken down and she asked to be reported. A local fisherman towed her into harbor.

LESBIA, OWNED BY JOHN DONNELLY. SHE COVERED THE COURSE IN 30.15.00.



KITTROIS, A 30-RATER OWNED BY F. D. GREEN. HER TIME WAS 35.47.45.

Beyond Nauset we ran into heavy banks of fog and lost sight of land.

On approaching Chatham Light we steered away from shore to clear the shoal that extends eastward of it. We could hear the sea breaking and thought it safer to give the place a wide berth, but although we went outside the buoys, we did not miss the breakers. It was a strange sensation, that dashing through the big combers in the dense fog. We could not see them coming, but heard the roar of their approach and stood waiting until they struck the boat a great slap and piled over the deck into the cockpit.

Beyond them there arose the question of whether to attempt the slew off Monomoy Island in making Shovelful lightship or to circle the shoal. The chart gives but a depth of three feet in the slew, and we reckoned that we would reach it at lowest ebb, so that it seemed an absolute impossibility to get across with a draft of 3 feet 6 inches. Still, we had found 4 feet on it before, two or three hundred yards from shore, and it all depended on whether we could find the exact spot or not. It was pitch dark and the fog, though lifting, was still pretty thick. It was risky, of course, but then, it would take nearly an hour off our time, and we put it up to the owner.

"What's your opinion of our chances?" he asked me.

I had to admit that it was a dangerous undertaking. We must run between two rows of breakers for quite a distance, and then go right into them for about two hundred yards.

"It depends entirely on the engine," I said, "even if we should have to strike, and it keeps going, the waves will give us sufficient lift to struggle over, but, if we bump and the engine stops, we are in an ugly hole, and the boat will probably pound to pieces before the tide rises sufficiently to get us off."

The captain thought for a minute and then shrugged his shoulders.

"It's worth trying," he decided; "I have absolute faith in boat and engine, and at worst, we can get stuck but for an hour or so. As we save that much time anyhow we will take the risk."

Foolhardy on the part of an owner? Of course it was. But it was one of those bits of foolhardiness that make us want to grip by the hand the man that is guilty of them. It is impossible not to admire such grit, even if we have to condemn it.

Presently the roar of the breakers could be heard on either side, drawing gradually closer. We all stood together in the cockpit, tensely watching the light that shone dimly through the mist, or glancing around, trying to pierce the gloom about us. Nearer and nearer came the rumble of the waves and then, with a thump and a swish, that shook the boat like a reed, a comber tumbled on to the high deck and, as we crouched, washed over us with terrific force. The craft righted herself bravely and drove her nose hard into the next wave, and the next, rising high every time and shaking herself free of the water like a duck. But a sudden jolt threw us off our feet; there was an ominous grating, and the boat stopped in her tracks, listing heavily to port. The worst had happened; we were aground.

For a second we were all stunned, and before we could rise the light bow had swung round with a swoop, and as we presented our broadside to the waves they pounded us furiously and mercilessly, spilling into the cockpit until we were half underwater. But Captain Cochrane was cool and alert.

"Up forward, boys, quick!" he shouted, taking the wheel from me; "she may clear if we take the weight off the stern."

Peppard and I crawled out on the turtle deck, snake-fashion, and clung hard to the flimsy bits of rope that led forward and that were our only support. It was a precarious position, with the waves washing over us and the boat whipping hard, as they hit or receded. We wondered how long we could stand it. But the shift of weight eased her up and immediately the powerful propeller shot her forward. She bumped and grated and swung for a few minutes, but the engine never wavered and foot by foot we went on, in a series of jolts and jerks. Then the hitting became less frequent, the boat shot forward at her usual speed,

CHUD—HER ENGINE BROKE DOWN AND SHE WAS TOWED TO PORT.

POINT JUDITH WHISTLING AND GAS BUOY.

ONE OF THE OCEAN-GOERS ON HER WAY TO THE STARTING LINE.

THE VINEYARD LIGHTSHIP—HERE THE BOATS HEADED FOR POINT JUDITH.

and as we found deep water the breakers gave way to a heavy swell. We were over and safe. In a short time we were clear of the shoals, and then rounded for Shovelful.

At 9.37 we passed Shovelful. It was a hard fight to Handkerchief lightship, but it became even harder after we passed it at 11 o'clock, and heading for Cross Rip received the full force of sea and wind dead ahead. The wind had attained the velocity of a small gale, and the sea was getting rougher every minute. It seemed at times as if the boat could not possibly live through it. We had lashed down everything movable, but so fierce was the tossing that things broke from their lashings and began to go adrift. It was impossible to stay in the cabin, and the only safe thing to do was to lie flat in the cockpit. The boat was half buried in water all the time, and one after the other the lights were washed out.

Even the binnacle lamp went out, and as it was impossible to either keep one's feet or strike a match, the problem of re-lighting it was a difficult one. But re-lighted it had to be, for the sky was overcast, the night too dark to see lights at any distance, and the compass was our only guide. Two men worked for half an hour at the task, while we steered first by keeping Handkerchief light over the stern, and then, when it faded into the distance, by a few stars, that luckily came out. Finally we succeeded in making the lamp burn, but the steering was still very hard, the boat tossing and pitching and leaping off her course in great jumps.

We made Cross Rip lightship at 12.40 and found more moderate weather beyond it. Then the barometer took another drop, and we wondered what next. We were not left long in doubt. Off Cape Poge it suddenly became very dark, an angry puff or two heralded the approach of another squall, and then down it swooped upon us, with rain in torrents and a wonderful electrical display. This soon passed over and then we carried fairly calm weather for a short while, but before reaching East Chop, the wind came out of the west in a gale, and as it churned up the Sound, the hail began to fall and things looked ugly indeed. The gale-driven hail stones hit with stinging force, and it was impossible to face them.

It was nearing dawn by the time we sighted, first the East Chop, then the West Chop lights. The sky had cleared, and we had ascertained that our reckonings were correct. We were soon able to alter our course for Nobscot light, but before we caught sight of it, the fog closed in once more and we were proceeding blindly, with the fog horn sounding. The trumpet off Nobscot allowed us to lay our next course to starboard for the Race.

By ten o'clock we had sighted and passed the black buoy off the western end of Block Island and, calculating that we would strike the entrance to Long Island Sound at change of tide, we decided to cut through Plum Gut. We entered the Sound at 2.30 and hugged the Long Island Shore until Horton's Point was reached. At 2 a. m., on Monday, we shot across the bow of the yawl Hyperion, harboring the regatta committee, having covered the 270 nautical miles in forty hours and forty-seven seconds.

Name.	Owner.	Length Over All.	Engine Horse-power.	Rating.	Time Allowance.	Elapsed Time.	Corrected Time.
Irene II...	S. W. Granbery.....	39.70	18.47	23.40	11.50.40	40.00.47	28.10.07
Eronel.....	Samuel Cochrane...	35.11	5.	31.06	4.21.10	33.03.50	28.42.40
Picaroon...	Theodore Baylies...	39.60	21.	29.30	6.43.30	36.58.30	30.15.00
Lesbia.....	John Donnelly.....	36.46	20.	30.11	5.25.20	35.47.45	30.22.25
Kittrois...	F. D. Gheen.....	38.68	24.	33.95	2.51.00	33.15.20	30.24.20
Alsoran...	Richard Hutchinson.	39.90	20.77	31.65	4.21.10	35.38.50	31.17.40
Barbara...	W. M. Duncan.....	34.98	12.7	34.63	10.53.40	43.33.10	32.39.30
Iloilo.....	P. E. Fansler.....	35.	9.	34.65	2.26.00	35.21.50	32.55.50
Fortuna II	V. M. Beolchi.....	39.60	20.	27.90	7.10.20	51.57.00	44.40.40
Pollywog..	N. N. Mason.....	33.	8.3	27.78	7.16.35	62.50.00	55.33.25
Elad.....	Wm. L. Dale.....	30.25	11.	32.95	3.30.00	73.20.00	69.50.00
Dandy II..	Wm. H. Rowe.....	30.25	10.46	39.75	Scratch.	Did not finish.	
Chud.....	John E. Peabody...	38.43	40.4				

ON BOARD KITTROIS.

GEORGE S. GOLDIE.

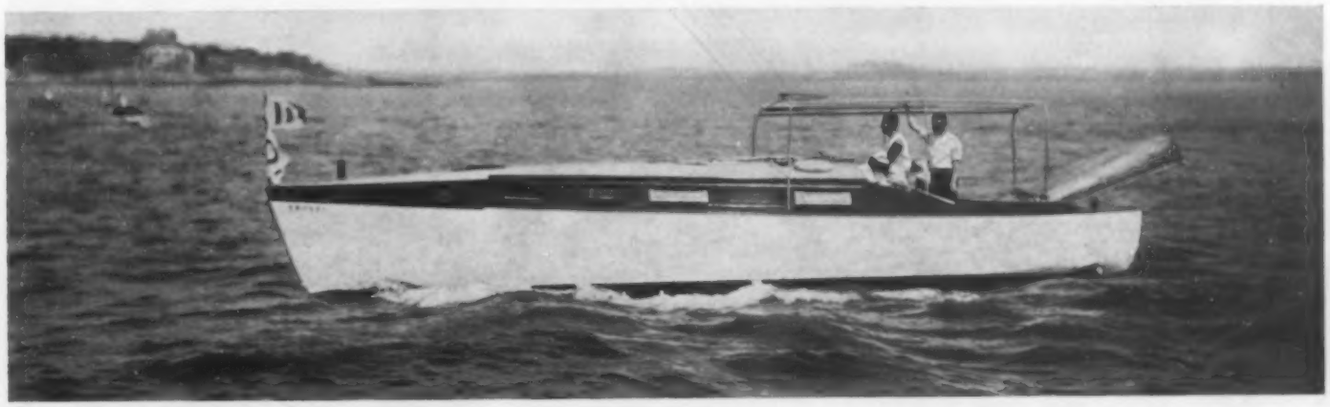
After leaving Marblehead Rock, Kittrois experienced several hours of good weather before the predictions of bad weather were verified. The long, easy swell that had been left from the blow of the night before was changing to wind-driven waves. Appearances showed an apparent reason for leaving the southwest storm signal flying. Her skylight was battened down, ventilator removed, and a man sent forward to lash the heavy brass cover of the galley hatch.

A dense black cloud was making well back in the northwest, from which lightning was playing. As we neared the Cape, the cloud was overhead, its center slowly revolving.

The wind velocity was twenty-seven miles an hour, which it had maintained all the afternoon. During squalls the rate was probably as high as forty or fifty miles, but we were now under the lee of the Cape and running merrily and comfortably.

When abreast Highland light, the signal station ran up a pennant with red and white vertical stripes, to which we could not answer. The Marconi wireless station, however, loomed up large; next came the three stubby lighthouses at Nausett, and with them our old friend, the black storm cloud, reappeared from the southwest and smote us again, but without effect, as we were too close in.

Fortuna II. and Barbara were dropping back to us in good style, when we became aware that one of the leading boats was lying at anchor ahead, with her flag flying "union down." While willing to pass a boat that gives no hail, the "union down" is a signal that should never be ignored.



THE SMALLEST BOAT IN THE RACE, ERONEL. SHE RATED 23.40 AND MADE THE DISTANCE IN 28.10.07 CORRECTED TIME.

We swung out and went under their stern. They asked that a tug be sent. Had they asked us to tow, we would have done it.

Irene and Picaroon were again well in sight ahead. At Chatham we were within hailing distance of Barbara. Here the fog shut in thickly. Our skipper was called from his nap and reached the deck just in time to get a glimpse of Barbara and the Chatham life-saving station. A glance at the chart gave the compass direction of the Chatham whistling buoy. In a case like this a dead accurate course was not required, and there was no time to use the parallel rulers. The distance was about three-quarters of a mile, and as a variation of one point would have made a difference of only one mile in five, a difference of an eighth or quarter point would land us well within the sound of the whistler. It was picked up handily, and the course shifted to S. x W. ¼ W., four and one-half miles, for Pollock Rip Shoals light vessel. Then to S. x W. ¾ W., four and three-eighths miles, for Pollock Rip light vessel. Both were picked up readily in spite of the fog. These courses were run without allowance for tide or wind; the wind being comparatively light and the tidal current almost fore and aft.

The boat was now headed W. N. W. ¼ W., three and one-half miles, for Shovelful light vessel; on this run a strong current, cutting across the channel, was encountered, and an allowance of one-half of a point was steered to offset it.

It was now dark, and the wind was rising fast. We swung for Handkerchief light vessel as soon as we could put Shovelful over the stern and headed S. W. x W. ⅛ W. Down the Butler's Hole passage we went smashing strongly into the heavy seas that were driven by an ever-increasing breeze. Soon Kittrois gave a giant lift, and down she went into the next sea. That settled our bow light. The joke of the thing had now ceased.

The rear and the plunge, the dash and drive of the spray, and even of solid water against one's face and body, became incessant.

The man at the wheel was blinded, sputtering and gasping. To add to his comfort, he was trying to steer by the stars, for the binnacle light was out of commission most of the time. The wash of the waves was his principal guide. Knowing the breeze to be southwest, the boat should not head into the waves too straight, nor be allowed to fall off too far.

All this happened shortly after turning the corner of Stone Horse Shoal and starting the run for Handkerchief. The skipper now roared for a necktie for the binnacle, for the purpose of preventing the too free passage of the wind through the one-eighth of an inch ventilator holes of the lamp.

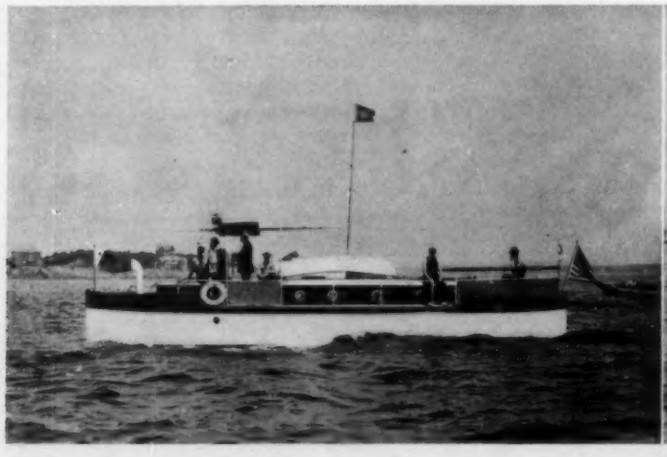
We approached Handkerchief, picking the seas up so that many of them came the whole length of the rounded deck and struck the helmsman and the watch with solid water. So slow was our progress that one of the crew doubted our position; and little wonder, for, with the lack of the compass, confidence was sometimes hard to retain. But Handkerchief finally opened up just off the starboard bow, and the boat on her course.

Glad we were when we turned her on the course, W. ½ S.; then the seas were taken well off the bow and, though she rolled, it was not deeply, and the hardest of the run was over.

Now, two of our troubles could have been avoided. Any boat, with the binnacle exposed to the weather, should have a wind shield for it, in the shape of a funnel that can be fastened to the deck and surround the light, except at its face.

The glare of the compass, for eyes blurred by salt water or dimmed by long gazing, can be greatly modified by covering the compass with a piece of blue glass. Try it; you will like it.

At Hedge Fence light vessel the sea was calm and the wind light. We were in a good lee, and the sail down Vineyard Sound was never more delightful.



RICHARD HUTCHINSON'S 33-FOOTER ALSORAN. SHE COMPLETED THE THRESH IN 30.24.20 CORRECTED TIME.

FORTUNA II., V. M. BEOLCHI'S 34-FOOTER. SHE MADE THE COURSE IN 32.55.50 CORRECTED TIME.

Below Quick's Hole we entered a long, easily rolling swell from the ocean, and before one could say "scat" the fog was on us.

The skipper did not try for the Vineyard Sound light vessel. Two tows exchanged blasts with him, one of them close-to, though unseen. That was as good as finding the light, for those men steer very accurate courses, and if you know what course they should be on, you can guide by them with safety.

Sandy Point, on Block Island, stuck out of a rift in the fog, then appeared the western end of Fisher's Island. The Race was entered on the full strength of the flood, and we made a rapid passage to abreast of Plum Gut.

When nearing Stratford Shoal, Barbara was sighted ahead. We pulled her down to within three-quarters of a mile and raised another of our friends between us and the horizon.

All this time the motor, a slow-speed, heavy duty Buffalo, had been working with a rhythm that was actually soothing; it must have been so, for the two engineers finished the race sleek looking and smiling. They simply gave it gasolene and oil; the motor did the rest.

From West Chop, the run through fog and sunshine was a delightful treat.

Kittrois passed the stakeboat at New Rochelle at 9.57.45 p. m.

SUMMER TYPE CUMULOUS CLOUDS. IN TROPICAL REGIONS THE UPWARD CURRENT OF AIR FROM THE LAND SOMETIMES CAUSES A CONTINUOUS CUMULOUS CLOUD TO OVERHANG THE LAND.

DOUBLE TURRETED CUMULOUS CLOUDS, FREQUENTLY SEEN IN HOT WEATHER AND OFTEN DEVELOPING INTO THUNDER STORMS.

Storms and Storm Signals

HOW THE EXPERTS IN THE UNITED STATES WEATHER BUREAU PREDICT ELEMENTAL CONDITIONS—THE SCIENCE OF DETERMINING THE APPROACH OF HURRICANES, HIGH OR LOW TEMPERATURES, HEAVY RAINS AND THE LIKE, AS APPLIED IN THIS COUNTRY, HAS LONG BEEN THE ENVY OF FOREIGN NATIONS

By C. H. CLAUDY

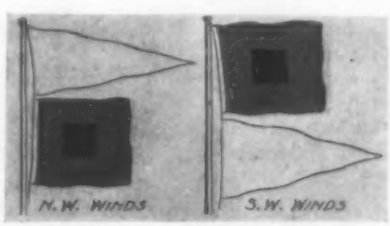
Photographs by the Author, Prof. Henry of the Weather Bureau, and others

TWO red flags, each with a black center; one above the other.

When you see them displayed from a flagstaff in a harbor you mustn't waste any more time than you have to, for that signal spells "hurricane," and you know hurricane spells disaster to any ship caught unprepared or near a lea shore. You accept the warning implicitly—experience has told you that it is seldom those flags are shown without cause, but did you ever stop to wonder how they got there, or in what way the storm is anticipated and prophesied?

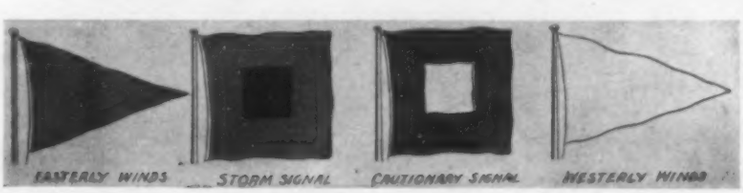
They come, of course, from the Weather Bureau, that division of the Department of Agriculture which concerns itself only with what is happening and what is to happen in meteorological phenomena. Just how, just why, and with just what reason for claims for accuracy, it is the aim to show here; inasmuch as every sailor depends so much upon the weather and so much upon his foreknowledge, it should be a tale of interest to every one who ever sets foot upon a deck.

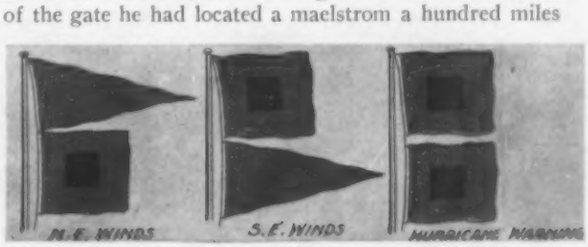
Three hundred years ago the world knew nothing of meteorology. To-day more than two hundred stations in this country, Canada and the West Indies keep track of the weather with electrical recording instruments, and this work is supplemented by hundreds of voluntary observers. How ignorant people were, and what courage they had to navigate under such circumstances, may be realized when it is said that the barometer was not discovered until 1643—twenty years after the Pilgrim Fathers landed! Galileo discovered the principle of the thermometer, Torricelli, his pupil, the barometer, and on the readings of these two instruments rests the modern science of meteorology. To these names should be coupled a third—S. F. B. Morse—for without the telegraph modern weather prophecy would be impossible.



It was Franklin—our own Benjamin Franklin—who first noted that a northeast storm was an effect and not a cause, that when a northeast storm occurred, some disturbance to the southwest had started things going first. He realized that air flows, by gravity, like water, and his simile of a windstorm being like the water in a canal to which the gate has been opened is not entirely inaccurate. Prof. Willis L. Moore, LL.D., Chief of the Weather Bureau, in commenting on this idea of Franklin's, says (Geographical Magazine):

"Franklin's analogy of the water is all right as far as it goes. But if, instead of the canal, he had imagined a broad ocean and in place of the gate he had located a maelstrom a hundred miles





wide in the center of the ocean, towards which the waters within a circle a thousand miles in diameter were moving, first slowly and directly towards the center, then with accelerating velocity and increasing deflection to the right of the center, and finally

CIRRO STRATUS CLOUDS, FREQUENTLY PRECEDING BAD WEATHER.

faster and faster as they drew near and gyrated with fearful speed about the orifice down which they must plunge, he would have gained a clearer idea of the motions in a large cyclonic storm, except that to make the analogy perfect it is necessary to invert the maelstrom and have the upper surface of the ocean face downwards upon the land to represent the atmosphere, and then the maelstrom, with its vast system of inflowing currents, must have a movement of translation eastward."

When the first predictions were issued in 1870 and for some few years thereafter, the service was regarded somewhat as a joke. We had the theory but lacked the practice and the men and the organization. But after a while people began to notice a marked relation between a prediction of a storm and the following weather, and while people may laugh at what strikes them as fanciful, let them get the idea that the fancy may save them money or life and they follow it fast enough.

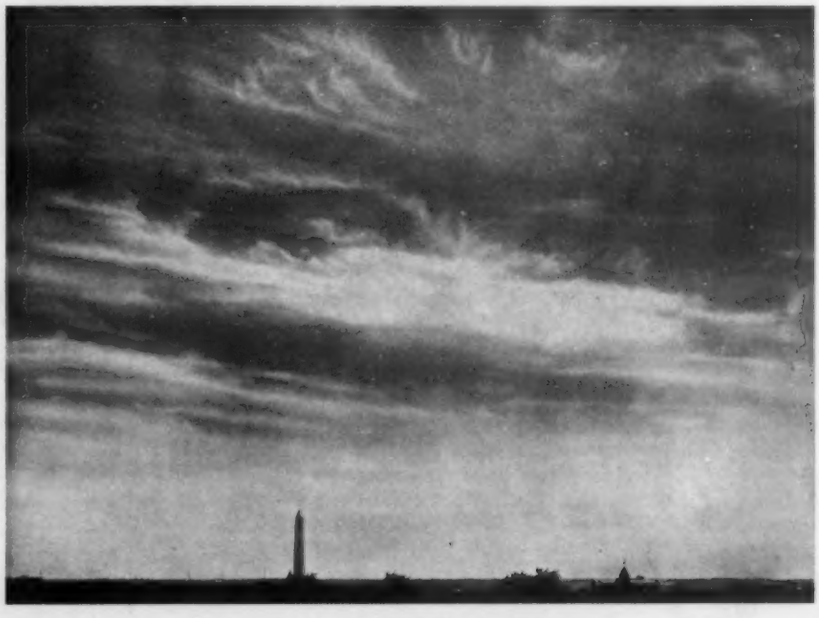
Now there is no port on our ten thousand miles of coast line without a staff for storm flags and someone to post them up, and any mariner who goes to sea in the face of two red flags with black centers has no excuse for his foolhardiness.

In order to predict with any degree of certainty what the weather is going to be, it is essential to know what it has been and is at the time of the prediction, and this, not for one or two or ten localities, but for the whole country. For weather, while occasionally local in character or modified by strictly local conditions, is in its nature a national—almost an international—affair!

The making of the weather chart for each day is at the bottom of the predictions. There is nothing particularly abstruse about telling what the weather is going to be, certainly nothing like the complications which are involved in predicting an eclipse of the moon or the sun. But neither is the weather prediction as accurate as those concerning the sun's or moon's motions. On the contrary, weather prediction is more like diagnosis of existing conditions from symptoms, and prediction of the future course of the illness, such as the doctor makes, and he only knows from experience what such and such a symptom indicates. The forecaster knows that, as a general rule, with certain indications a certain thing is going to happen, but he can't tell if some sudden disturbance, of which he has no knowledge, is going to intervene without warning, or if his winds are going to blow as they ought to blow, any more than the doctor can say with certainty that some foreign germ isn't going to get in its deadly work and upset all his calculations and give his patient a fever when he ought to have the chills!

Nevertheless, weather forecasting is surprisingly accurate, particularly when large changes are in consideration—hurricanes, cold waves, floods, very heavy rains, severe rises or falls in temperature, very strong winds, etc. Even the local predictions, which are very much like a doctor trying to tell a man with the gout which of five toes is going to ache worst, are accurate to the amount of seventy-five per cent., and the weather predictions for great storms, which interests us particularly here, are very rarely at fault.

Every morning at eight o'clock, by 75th meridian time, the hundred and more observers in the United States and the West



CIRRO STRATUS CLOUDS OF A PRONOUNCEDLY BAD TYPE.

Indies are making observations and noting the results—air pressure, temperature, humidity, precipitation in rain or snow, degree of cloudiness, etc. In fifteen minutes these observations are put in cipher and are on the wires. Such messages have right of way over all other business, and in less than an hour all the

SUMMER CUMULOUS CLOUDS.

CUMULOUS CLOUDS. STORM TYPE, BEFORE STORM.

reports are in the hands of the bureau in Washington, D. C., and its branch bureaus in most of the larger and more important cities, where weather maps are issued.

The cipher telegrams are translated, and a force of clerks transfer the data thus obtained to blank maps of the United States. One clerk makes a temperature chart, in which variations in temperature of more than ten degrees are shown by red lines joining such localities—isothermal lines, as they were called technically. A second clerk makes a similar chart showing barometric pressures, the lines joining localities of the same pressure being called isobars. By comparison with the chart of twenty-four hours back, it is easily seen where the barometer and thermometer have risen and where fallen.

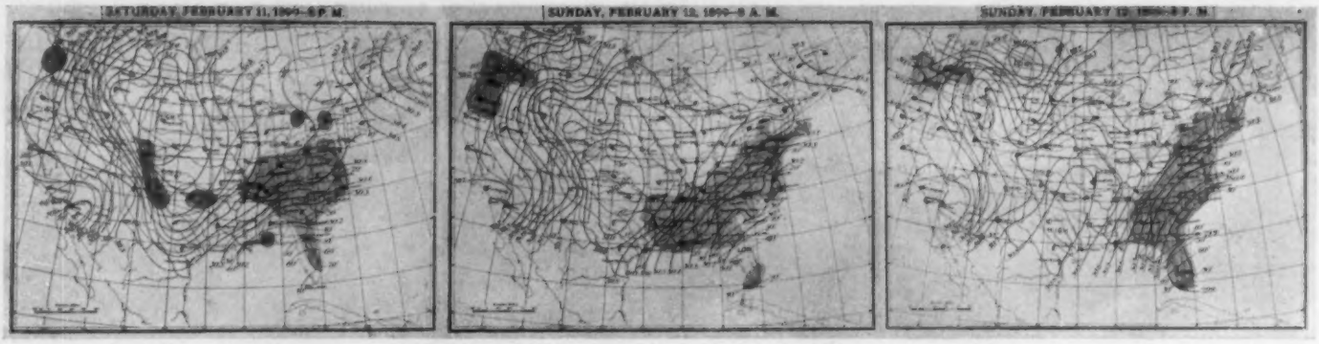
A third clerk makes two charts, one showing humidity and the other cloud areas, the latter showing the variety, the direction and the quantity of clouds at each station. A fourth man makes what is called the general weather chart, which shows for each station the air pressure, the temperature, the velocity and direction of the wind, the precipitation of rain or snow since the previous day's chart and the percentage of cloudiness. Barometer readings are reduced to sea level so that the low barometer readings due to high altitudes may not confuse the forecaster or mask the true conditions. Isobars are drawn for each tenth of an inch of atmospheric pressure. Immediately the areas of high and low pressure stand out on the chart, and the first great step in predicting the weather is accomplished—the graphic delineation of the weather that has been and is, from which the weather which will be can be deduced with a remarkable degree of accuracy.

An "area of low pressure," or a "low," as it is usually called on the weather map, is the amount of country inclosed in an isobar connecting points where the barometer has a low reading. The barometer is low when the sea of air above it is shallower than usual. An "area of high pressure" or a "high" is the amount of country inclosed in an isobar connecting points where the barometer has a high reading. The barometer is high when the sea of air above it is deeper than usual. The mercurial barometer is nothing more or less than a glass tube, about three feet long, sealed at the upper end, filled with mercury and inverted so that the open end is in a small cup of mercury. The mercury runs out of the tube, causing a vacuum (save for mercurial gas) until the weight of the column of mercury within the tube and the weight of the column of air the same diameter above it balance each other. When the air piles up this pressure increases, the mercury rises in the tube and the barometer reads "high." When the air flows away and leaves a shallow place in the ocean of air this pressure decreases, the mercury sinks in the tube, and the barometer reads "low."

As air, like any other fluid, has a tendency, from the force of gravity, to flow from high places to low ones, the area of low pressure is usually the place to which air will flow from some nearby area of high pressure. Consequently, an area of low pressure, or a low barometer reading, indicates, unless other factors modify the prediction, a wind, and the velocity of the wind will be, other things being equal, in some measure proportional to the low reading of the barometer. The figures of a barometer reading are inches of mercury column—"30.7" meaning that the column of

CIRRO CUMULOUS CLOUDS. "MACKEREL SKY."

ALTO CUMULOUS. WAVE FORMATION.



Saturday, Feb. 11, 8 P. M.—Map shows region of high pressure in Middle West, with precipitation (rain or snow, according to temperature) over the East, and barometer getting lower towards Florida. Sunday, Feb. 12.—The Western high pressure has come South and East, and the Florida low is lower. Temperature is low in the Atlantic Coast. When a high barometer and a low one are close together, wind may be looked for, inasmuch as the slope of the pile-up air to the hollow where the low pressure is, is great. Sunday Night, 8 P. M.—The low, over Florida and the Ocean, is pronounced, 28.9, and the high over Texas is also pronounced, 30.8, nearly an inch difference in the barometer. Temperatures are lower; precipitation has increased, and heavy winds are blowing from the Northwest—from high to low.

mercury is thirty inches and seven-tenths of an inch high.

The barometric readings, and the isobars, tell much of the story to the experienced weather forecaster. For instance, if he should note an area of low pressure, over New Jersey say, where the barometer reads 29.4 and an area of high pressure in the Great Lake region, with the barometer reading 30.6, he would know that that difference of one inch and two-tenths in pressure between the two localities meant business, and that allowing for all roughness of ground and friction, the wind was going to howl down on the Atlantic Coast at fifty or sixty miles per hour, and the storm flag would be flung out surmounted by the white pennant, indicating a northwesterly wind of severity. It is gravity which causes this kind of a storm—the heaped-up air in the region of high pressure, flowing down into the region of low pressure, where there is less air. And as it flows, it increases in velocity, swings sidewise a little, forms a spiral and becomes a cyclone.

Monday, Feb. 13, 8 A. M.—The height of the storm occurred in the Virginia and Maryland regions. The map shows the area of greatest low pressure, combined with the area of greatest low temperature, off Norfolk, Virginia, with high pressures to the north, south, west, and probably east of it, resulting in a whirlwind of air, which brought hard wind from the north and intense cold as far south as Florida, where ten degrees was recorded.

It is necessary to clearly distinguish between three terms often confused in weather lore, and frequently used interchangeably, although the meaning of each is distinct. A cyclone is an immense atmospheric eddy, spreading over thousands of miles of area, and is comparatively slow of internal movement. Cyclones are almost invariably going on all the time and are the backbone of the weather of the world.

A hurricane is similar in form to a cyclone but much smaller in area and much more violent in action.

A tornado is the most violent of the three, is extremely limited in area, often not exceeding a few hundred feet, but is of such enormous violence that nothing can stand in its path. Houses, trees and heavy objects of all kinds are handled by it as a child handles a ball. All three are cyclones in form, but all cyclones do not partake of the nature of hurricanes or tornadoes.

All air movement, then, is rotary about some center, but the center is seldom a stationary one. Storms not only have a rate of revolution, which, for any given place in the storm, is practically the wind velocity, but they have a rate of translation. Prof. Moore draws an analogy between such storms and the solar system—when the planets are considered as revolving about the sun, we have the simple revolution of the system, or a stationary cyclonic storm. But if the sun is considered as moving through space, with all its planets revolving around it, then we have the cyclonic or circular storm, which is also moving as a whole, well illustrated.

Of course, all weather conditions are of interest to the mariner. Enough has been said of the method of construction of the weather map to show that prediction depends upon a knowledge of what already exists, and that by a comparison of what has been done by a storm, in a given time, some idea of what it is going to do, in another given time, can be arrived at. But there is another part of weather forecasting, which affects mariners in a marked degree, besides the prediction of wind from barometric pressures and existing conditions. This is the reporting of the hurricanes coming up the coast. Twenty-five years ago such

Monday Feb. 13, 8 P. M.—The storm center has swept up the coast from Florida to New York, carrying the wind, snow and cold with it, the high surrounding it and falling in behind. But the high is not so high as it was, 30.4 and 30.2, and, on the other hand, the low is higher, having risen from 28.9 to 29. Thus the balance is being restored, although the combination of the heavy winds, the prevailing low temperatures and the rapid movement of the low up the coast has produced the biggest blizzard in years. Tuesday, the 14th of Feb., at 8 A. M., the low is off the Coast of Maine; the precipitation is going with it, and the sun has come out as far north as Virginia. Tuesday, at 8 P. M., the low is off into the ocean; the barometer is high all along the coast, the wind has died down and except for a slight snow near Halifax, the storm is over.

storms came with little or no warning and left death and wreck in their path. Now any ship which gets caught in one is either a ship which has had no opportunity to get the warning, or one which does not heed it.

Almost all true hurricanes originate in the tropics, move northwest to latitude 26 to 32, and then curve northeast. The West Indies and the Philippines are the birthplaces of most of these storms, and the whole world has profited by the United States Government's establishment of cable-reporting weather stations in these two localities. A hurricane acts independently of man's predictions. Sometimes it remains stationary, blowing like mad in a circular path, at other times its center moves along swiftly or leisurely. Sometimes we know there is such a disturbance only by heavy ocean swells, or a wind which can have no other cause than suction from some central disturbance. But when such a hurricane is in progress, the telegraph lets us know, and by comparison of its actions from day to day, we can, in some measure, say when it will arrive at a given place, what part of it will pass over the harbors and therefore about what speed of wind will be encountered. These warnings may be anywhere from half a day to three days in advance of the storm, but they are nearly always in ample time to give every vessel opportunity to get to a secure harbor, or far enough to sea to ride out the storm in safety. Of course, there are times when the storms are so violent that in the harbors the greatest damage is done, and ships are wrecked and property damaged to the amount of thousands of dollars. The value of the warning in such a case is the saving of life and the keeping of ships at home to be destroyed, rather than letting them go out to sea to be destroyed along with the crews and passengers.

For ships at sea there are no predictions, unless they are equipped with wireless. With that, and when they are following the coasts, they can be easily warned of all storms, and the saving which is made in this way is beyond calculation. In addition, the wireless helps pay the debt to the weather bureau, since many ships so provided take notes of weather conditions and send them in to the nearest weather station, which is thus enabled to get some idea of barometric conditions, wind direction and temperature on the sea, often of the greatest value in determining the coming weather. The map is like a puzzle piece, some parts of which are lacking and the weather in the oceans are the missing pieces, so when these are known, even in part, they help amazingly in guessing the riddle of what wind is to blow and what temperature we are to have.

The clouds have been from the beginning of time the principal indications of the weather to the eye, and many a mariner has built a reputation as a prophet from his ability to forecast the weather from the appearance of the heavens. And for very short-time predictions they are of service. Almost any one can tell, when they see a thunderhead with lightning streaking through it, that rain is imminent! But a cloudless sky in the morning may mask the hurricane which is a few hundred miles away, and without the glass, the cloud-based predictions are none too reliable.

Because the clouds indicate weather in a different manner according to the geographical location of the observer, and also because they are, in themselves, but by-products of the weather and are not causes, weather predictions from clouds at sea should be taken with plenty of reservation of judgment. To say, for instance, that at a "red sky at night, sailors delight" is very tuneful and possibly truthful where knowledge is conspicuous by its absence, but a red sky at night may mean almost anything from a surplus of moisture in the air, meaning probable rains, to a volcanic eruption two thousand miles away, which has sent great clouds of dust into the air, causing the red color by reflection and refraction of the light rays.

AGROUND AND DAMAGED BUT NO LIVES LOST. AN EXAMPLE OF WHAT THE STORM WARNING CAN ACCOMPLISH.

DISMASTED AND A WRECK. THE STORM WARNING WAS RECEIVED TOO LATE.

THE SAME WIND WHICH BLEW DOWN A CONCRETE PORCH TOOK THIS VESSEL BODILY OVER THE BEACH.

Again, while speaking roughly, the color of the sunset sky is an indication of the amount of moisture in the air, a good hygrometer indicating the humidity is much more reliable, and as colors in sunsets are caused by other things than moisture, such predictions frequently fail.

However, taken in conjunction with other factors, the condition and appearance of the clouds mean much, and particularly to the mariner at sea, who is not in touch with weather maps and must be his own forecaster.

The clouds all have names and combinations. Some of the pictures, beautiful examples of cloud photography, by Prof. Henry of the Weather Bureau, illustrate some of the varieties. Clouds are called—cirrus, stratus, cumulous, nimbus, cirro-stratus, alto-stratus, cirro-cumulous, alto-cumulous, strato-cumulous and cumulo-nimbus. These are the principal forms and combinations. The cirrus clouds are those of striated forms, high up in the air. Stratus are those which are, as their name indicates, stratified, and may be high or low lying. Cumulous clouds are more or less isolated, and have rounded tops and flat bases and are seldom high. Nimbus clouds are those from which rain or snow falls.

(Continued on page 170.)

Successful Use of Spark Plug Ignition

By HERBERT L. TOWLE

THERE is no ideal ignition system. Either high or low tension ignition has its weaknesses, which must be reckoned with and guarded against if satisfactory service is to be expected. The low tension or "make and break" system is the more popular for motor boats, owing to there being no great care required in insulating the wires. On the other hand, the make and break system involves small moving parts, both outside and inside the cylinder. It is not entirely easy to keep the rocker stem extending into the cylinder both gas tight and properly lubricated. When an engine has several cylinders, there is a distinct possibility of the spark time not being correctly equalized among them all. In addition, the contact points inside the cylinders are subject to burning from the heat of the sparks, and require periodic renewal.

The mechanism of the high tension or "jump spark" system is extremely simple. The moving parts are few and all outside the cylinder. It is easy to get fairly exact synchronism of the spark time in all the cylinders, and the current used is not so heavy that deterioration of the contact points is a serious matter. The chief precautions required are in connection with the high-tension current, which passes from the spark coils to the spark plugs. This current has a voltage sufficiently high to produce sparks of from ¼ to ½ inch long in the open air, or, roughly, 20,000 to 40,000 volts. It is not dangerous because the quantity of current is extremely minute, but it is hard to confine such a current to its intended path; the slightest leakage is fatal to reliable ignition.

Taking the secondary or high-tension current first, the following are the principal precautions to be observed:

1. Locate the spark coil set as close to the engine as convenience and accessibility will permit. If necessary, erect a special wood frame to support it. An excellent arrangement is that used in many racing boats, in which the engine is located forward of the helmsman, under a hood, and the bulkhead at the forward end of the cockpit supports the steering wheel, spark coil box and sight feeds of the engine lubricator, as is done by the dashboard of an automobile. In a cruiser or day boat, the engine may require to be located amidship, instead of forward, since the tendency to squat aft is not so pronounced; but in any case the high-tension cables, from the coils to the plugs, must be as short as possible, and never over three feet long. The object of this is to minimize the electrical capacity of the cables, which tends to weaken the spark.

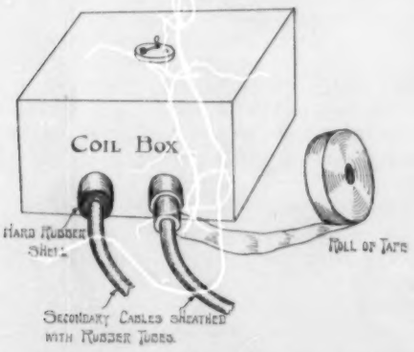


FIG. 1.—METHOD OF WINDING TAPE AROUND SECONDARY CABLES AT THE COIL BOX.

2. It is essential that the spark coil, plugs and all parts of the cables be protected from water as thoroughly as possible. This condition is not sufficiently fulfilled by simply keeping the cover on the coil box. The latter, and the engine as well, should be covered by some sort of a canopy, spray hood or turtle back, according to the type of the boat, when there is a chance of either rain or spray reaching the power plant. If the spark plugs and high-tension cables are protected, a cover to exclude the rain is not absolutely essential, since chemically pure water is almost a non-conductor of electricity. Salt spray, on the contrary, is a very good conductor, as liquids go, and even a combination of salt air and fog is likely to cause sufficient leakage at the plugs, when the engine is cold, to make starting difficult. When the engine is running, a slight moisture due to fog would be evaporated from the plugs too quickly to make trouble. Under no circumstance should the bare plugs be exposed, either to rain or to spray, even if the water on which the boat is used is fresh. A single splash on a hot spark plug is sufficient, not only to ground it until the plug is dry, but, in all probability, to crack the porcelain as well.

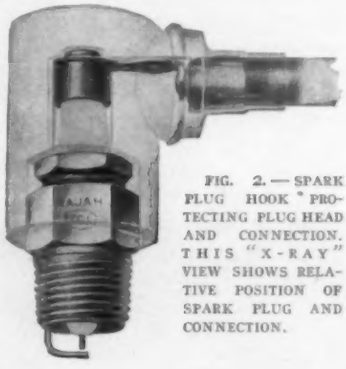


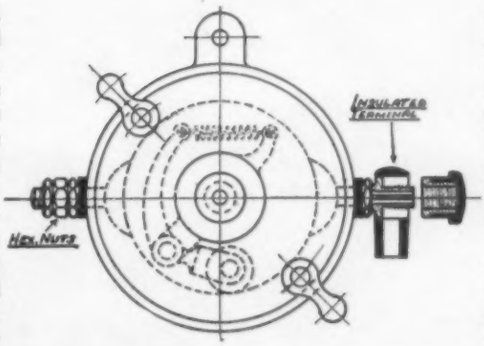
FIG. 2.—SPARK PLUG HOOK "PROTECTING PLUG HEAD AND CONNECTION. THIS "X-RAY" VIEW SHOWS RELATIVE POSITION OF SPARK PLUG AND CONNECTION.

3. The one sure way to prevent current leakage, due to moisture, is to cover every portion of the cable and plug, so that no moisture can reach them. The first step is to place each cable in a rubber tube before the terminals are attached. The cable connects with the coil by a binding post at the bottom of the coil box, and the binding post is covered by a hard rubber shell, through which the cable passes. Although this would appear to be a sufficient safeguard, it will be well to tape the cable, as shown partly finished in Fig. 1, where it comes out from the rubber shell, and to extend the tape upward to surround the shell itself. It is well to sandpaper the tube close to the shell, and apply a coat or two of rubber cement before winding on the tape. At the spark plug, the cable should pass through a porcelain hood, as shown in the X-ray picture, Fig. 2. These hoods are not a complete protection against water, unless the opening through which the cable passes is thoroughly taped. The tube should go over the ferrule, and be treated with rubber cement, and taped exactly like the end at the coil box. It will be seen that this treatment presupposes that the plugs do not often have to be renewed. If the cylinder lubrication is properly managed, and the spark plugs are located in a pocket at one side of the combustion chamber, this condition is not difficult to fulfill, particularly if the plugs are of the design having the porcelain fairly well protected from possible oil.

4. So far as the high-tension current is concerned, the only other precaution needed to insure efficiency concerns the spark plugs themselves. The cylinder oil must be of good quality and must feed no faster than will produce a very thin smoke in the exhaust. Some oils deposit much more carbon than others, and it will be worth while to pay the price of a first-class lubricant for the sake of freedom from spark plug troubles. Always carry a duplicate set of plugs and several spare porcelains besides, since frequently the porcelain can be taken out and cleaned with gasolene and a tooth brush, or with very fine sandpaper.

5. The spark timer (sometimes called the commutator) in the primary circuit needs to be kept clean and suitably oiled. If it is of the roller contact type, a few drops of oil should be put on it every day. It will not do to pack the space in which the roller travels with grease, as this will prevent it from making quick and certain contact with the segments. If, however, the timer is of

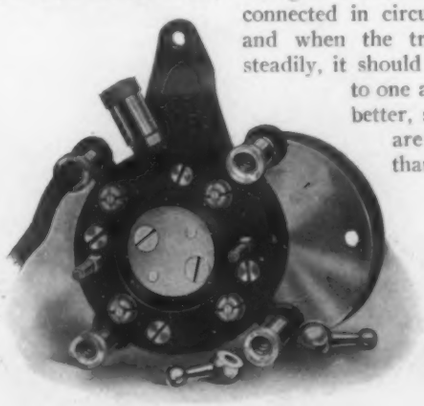
the snap contact type, it may be packed with thin grease or vaseline, and allowed to run several weeks without attention. At the end of this time, it will need to be cleaned out with gasolene, and fresh grease supplied. Either the roller or the snap contact timer is subject to wear and burning of contacts. The segments of a roller contact timer can be trued by reboring in a lathe. The tool steel contacts of the snap type can sometimes be dressed slightly on an emery wheel, and will need to be replaced once in a season or two, according to amount of use. If the timer has ball bearings it will run true for a long while. If, however, it is of the plain bearing type, the bushing will in time wear loose and permit the timer to wabble, producing irregular firing. The remedy is a new bushing or an up-to-date timer.



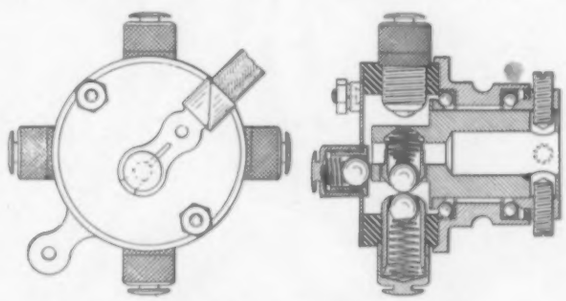
TYPICAL SNAP CONTACT TIMER FOR 4-CYLINDER ENGINE.

6. Success in using trembler spark coils lies in proper care and adjustment of the tremblers and contact screws. The end of the trembler should be as close as possible (*i. e.*, about 1/16 inch) to the bundle of soft iron wires which make up the core of the spark coil. If, when the contact screw is run up until it does not touch the trembler, the latter is over 3/32 inch above the core, it should be carefully bent to bring it lower. Some tremblers have a spring adjustment which permits them to be moved up or down until the proper distance from the core is found; this avoids the rather delicate and unsatisfactory operation of bending the trembler. The contact screw should not bear against the trembler with greater pressure than is required to produce a steady stream of sparks when the circuit is closed. If the trembler is forced down close to the core simply by the pressure of the contact screw, an excessive consumption of current results without corresponding increase in the strength of the spark. When the correct adjustment of trembler and contact screw has been found, the contact points should be dressed as smooth as possible with a very fine jeweler's file. If the engine has several cylinders, the tremblers should be separately adjusted as near alike as possible. Their condition in this respect is roughly indicated by the note which the trembler makes when working, and from this fact the operation is known as "tuning" the trembler. If the tremblers are not equally tuned, one will spark a trifle earlier or later than another, even though the circuit be closed at the correct intervals by the timer. At low speed this is not material, but in fast going the irregularity of spark timing thereby produced impairs seriously the efficiency of the engine.

7. An excellent way to determine the battery consumption is to use a small ammeter, reading to about three amperes. This is connected in circuit with the battery, and when the trembler is vibrating steadily, it should read about one-half to one ampere. The less the better, so long as the sparks are regular and not less than 3/8 inches long. It is very easy indeed to use several times the current necessary, simply by giving the contact screw a turn or two, and the ammeter will save its cost in a short time if regularly used. A cheap coil may use several times as much current as a high-class coil, for the same length of spark, three amperes being a rate of consumption sometimes reported. Naturally, even a storage battery will not hold up long under such a rate of discharge, and dry cells are useless, except as a reserve.


TYPICAL ROLLER TIMER FOR 2-CYLINDER ENGINE.

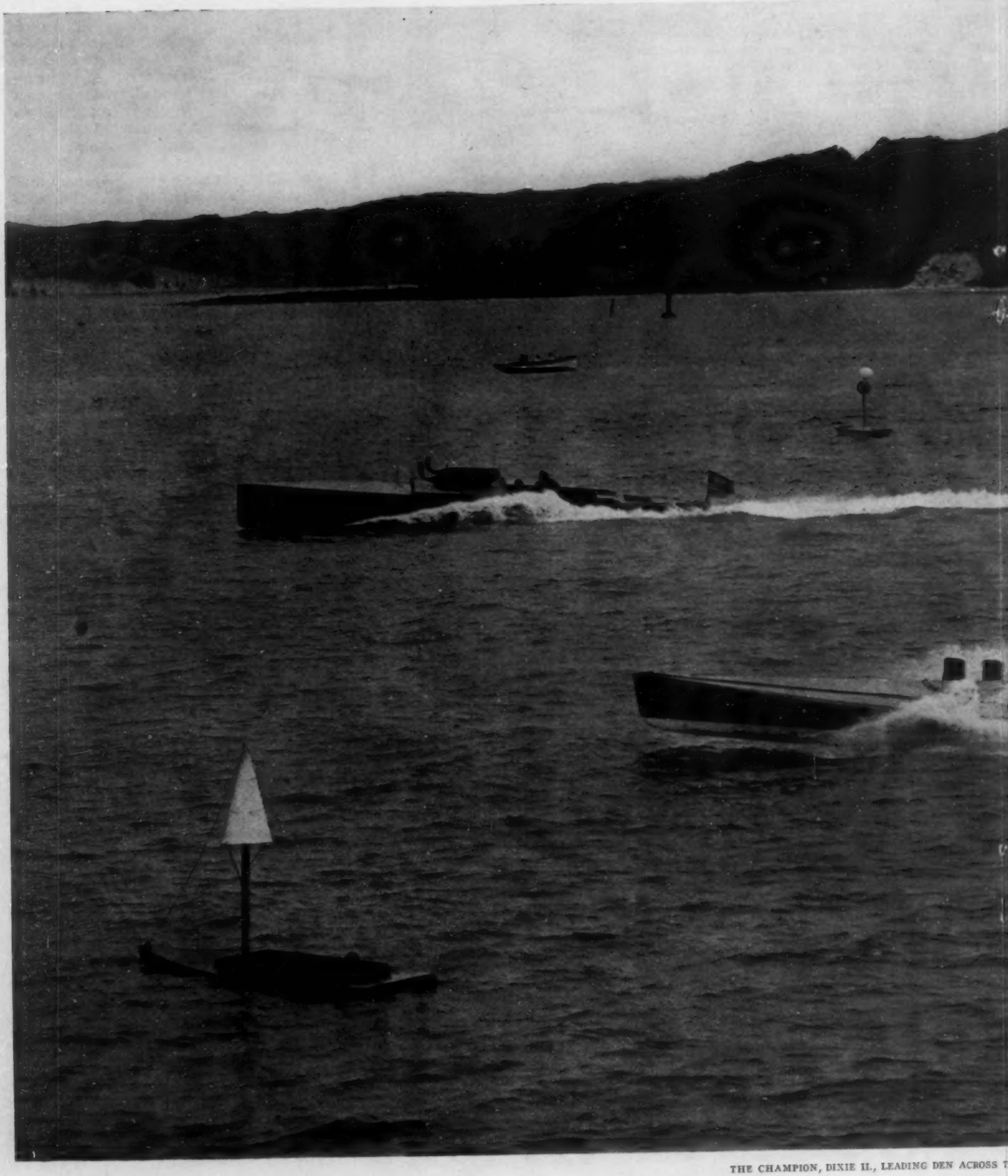
8. Do not use a stronger battery than the coil is designed to take. Most coils work well with a 6-volt storage battery or six dry cells in series. An excessive battery not only burns out the timer and trembler contacts with undue rapidity, but is liable to make trouble in the coil itself, by short circuiting or by puncturing the condenser. Many users do not realize that the more cells are used in series with a given resistance, the more rapidly they will discharge. The reason is simply that the current flow is nearly proportional to the number of cells in series, and the heavier the flow the sooner the cells are exhausted. On the other hand, it is found that dry batteries may be economized by working two sets in multiple. For example, if six cells in service are required to give an effective spark, equal or slightly better sparks may be obtained from twelve cells, connected six in series and two in multiple; but under these conditions each group of six cells is delivering but half the total current, or only a trifle over half its discharge rate when taken single. Since it is characteristic of the dry battery to "run down" faster as its discharge rate is increased, it follows that the procedure just described will more than double its life. In a word, the two groups used together will last longer than if used separately.


TYPICAL BALL-BEARING AND BALL-CONTACT TIMER.

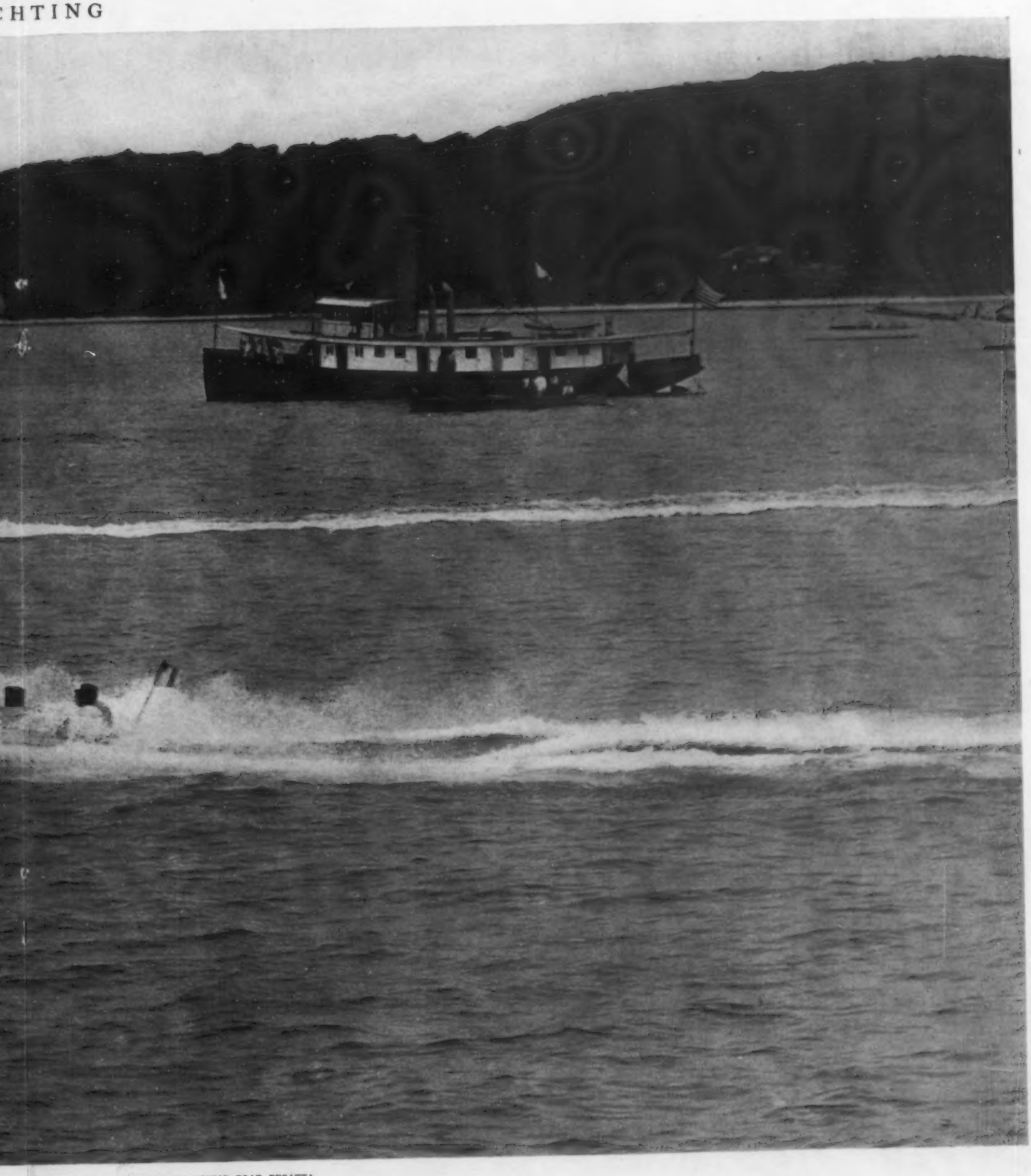
When all the cells are fresh, it is wholly probable that only five in series (ten in all) will be needed, and the other two can be held in reserve to be connected in later. When "siamesing" batteries in this manner, it is well to remember that the capacities of the two parallel groups should be about equal: that is, it will not do to put all the nearly spent cells in one group and fresh cells in the other. If some cells are "low" and others "high," the low and high cells should be apportioned evenly between the two groups.

9. Recently a new arrangement of jump spark coils has made its appearance, in which a single small supplementary coil actuates a trembler, through which the current goes to all the induction coils in order. This small trembler coil, the "synchronizing coil," has the great advantage over the ordinary arrangement of coils with separate tremblers that there is no chance for unequal adjustment of the different tremblers to produce variations in the spark timing. No change in timer or wiring is required to use a coil set of this description.

10. If the engine has three or more cylinders, it is best to regard the dry battery simply as a reserve, and to provide a storage of caustic potash battery for regular service.



THE CHAMPION, DIXIE II., LEADING DEN ACROSS T



OSS THE LINE IN INTERNATIONAL MOTOR BOAT REGATTA.

Around the Horn—The Log of a Second Mate

By T. JENKINS HAINS

CHAPTER VI.—(Continued.)

THE weather, in spite of it being summer time in this latitude, is very cold, and necessitates the wearing of the heaviest clothes. We still make some headway on our course, and are working back again toward the shore, as it is always best to pass inside of the Falkland Islands—that is, between them and the coast of Patagonia—in working to the southward to weather the Cape. It is just the opposite for vessels homeward bound, rounding the Horn to the eastward; they generally keep well out from the islands so as to make a fair wind of any gale that may blow from the southward.

December 12. It has been calm all day, and the light air now stirring just keeps steering way on the ship. The time drags wearily by, and it is everyone's ambition to do something to kill it. Some beat rings out of small silver coins, and I, following the example of one of the quarter-masters, have beaten a ring out of a silver quarter of a dollar and fitted it to the top of my pipe, where it shows to great advantage.

At supper time I called down the companionway to the captain that the ship was heading east by north, and going off all the time. All hands were called to tack ship.

"Main clew-garnets," yelled the captain as he came on deck, and the mainsail was clewed up and left hanging in the buntlines. Foresail and cross-jack followed suit. The preventer stays were sent down from the mizzen top-sail yards, and the jumping stay from the spanker boom.

"All ready forward," cries the mate.

"Wheel down!" says the captain to the man at the wheel, and the ship comes slowly up into the freshening breeze.

"Har-r-r-rd a lee," roars the captain at the top of his voice, as he stands on the break of the poop, and the cry is repeated forward by everybody, even including little "Johnny," the stowaway; while the mate slacks off the head sheets to allow the ship to come up to the wind easier.

"All ready?" from the captain.

"All ready, sir," answers the mate from forward.

"Main top-sail haul," then bawls the skipper, with an effort that causes him to become almost livid.

There is a great rushing, rattling and creaking as the yards on the main and mizzen masts come around by the run, the men stationed at the lee braces letting go everything, and those at the weather braces hauling down until the yards are braced sharp up on the other tack—the port—while the yards on the foremast are left stationary. These sails are now well aback, and under the pressure the ship pays off rapidly.

"Taut bowline," yells the mate from the top-gallant forecastle.

"Let go your bowline," roars the captain, after a moment's calculation as to the ship's movement.

"Let go and haul," sings back the mate in return, and the fore yards are swung around and braced sharp up to the back-stays. The jib-sheets are hauled down, as are the sheets and tacks of the courses, all gear cleared up and coiled down, the preventer stays set taut, and silence again settles over the dreary waste of the South Atlantic Ocean.

CHAPTER VII.

A vessel, having passed the 40th parallel S. lat., going to the southward of the River Platte, has about got out of the domain of the "Pompero," and is now in a region of variable winds which, however, during the summer season in these latitudes, blow generally from a southerly direction.

This being the case, it is always best to keep as close in to the westward as the coast will permit, in order to take advantage of a stiff southwest breeze and run down the distance to Staten Land under the lee of the shore in smooth water, with the yards braced sharp up on the starboard tack, keeping far enough off, however, to avoid the danger of getting "jammed" should the wind haul to the southward or eastward.

The long tedium of the voyage is felt quite severely by all on board the ship, and everyone is calculating how long it will take to weather the Cape, or if the ship will ever get around it at all. With two months taken to cross the 40th S. parallel, the grumblers will now begin to predict a speedy termination of the voyage by "the bloody ship foundering off the Horn." All these hopeful predictions, however, never come abaft the mainmast, but fill the air of the fo'castle and the forward house, where it is perfectly safe for Jack to give full vent to his spleen.

In the carpenter shop the third mate and the carpenter, familiarly called "Chips," will hold lengthy arguments on seamanship, and, when there is nothing to be cooked, they will be joined by the "doctor" and the steward, who will listen attentively and join one side or the other of the heated debate. Now and then the second mate, after first seeing that the coast is clear and the captain out of sight, will stop a moment at the door and listen also to the wise interrogations and still wiser answers that are hurled rapidly back and forth between the contestants. The argument will probably be something like the following:

"Chips," asks the third mate, "if a vessel ever got to the north pole and steered away from it southwest, what kind of a course would it steer in order to get back again?"

"Chips" will stop work and think for a moment, and then answer: "No'theast, of course."

"How the devil will a vessel ever get to the pole by steering northeast. Why, man alive! a vessel can't get there on any other course than due north."

"Chips" will scratch his head for a moment. "That seems all right enough," he will answer, "but I know that if you sail away from a place straight away, you can get back only by turning around and sailing in exactly the opposite direction."

Then they will call on all who have the good will of "Chips," and who consequently may enter the sacred domain of shavings, to aid them with the weight of their opinions.

There is plenty of work for the crew, for the mate overhauls everything to be sure that there is nothing insecure, and it is seldom that he is not as hard at work as at any time while running down the trades. In fact, there is always something to be done aboard ship, and it is probably a good thing for the men that this is so, for as soon as sailors have little to do they become hard to manage, and do an amount of cursing and grumbling that is astonishing. A good mate fully appreciates this fact, and consequently, when he has done about all the very necessary work for the management of the ship he will be at no loss to find or make more.

December 16. To-day we have been sixty-two days out from port, and have crossed the 42d parallel, S. lat. For the last few days the weather has been calm and foggy in the mornings, with now and then a light breeze freshening up in the afternoons. When it has not been foggy it has been most delightful to be on deck, for the weather is very much like what it is off the capes of the Chesapeake Bay during the late spring months. The sun

shines sparklingly over the calm sea that is just rippled by the light currents of air stirring, into long lanes of darker water. The temperature is such that one can sit out in the sunshine with heavy clothes on and not feel too cold to be comfortable. Toward noon a fine American sloop out of Salem passed to starboard. She made a beautiful picture. There was an unfortunate accident on board the other day when our two little pigs, which have suffered long imprisonment on account of the bad weather, were turned out on the deck to have a little run and enjoy themselves. They would start forward, and with a great "houghing" for such small bodies, plunge wildly down the gangways as hard as they could go, sometimes stepping on a wet place on the deck, and, rolling over in their wild career, but seeming to enjoy the sport greatly in spite of every mishap.

The waterways were open, and the little boar pig, being inquisitive, began to nose around on the main channels; in a moment a swell washed up and frightened him so that he slipped and fell overboard, uttering a wild squeal.

His friend, the steward, heard him, and rushed to the side of the ship calling out something that sounded like "Man overboard!"

In a moment everyone had rushed to the side, and were gazing at the struggling animal, which swam in an upright position and looked as though he would cut his throat with his sharp forefeet, as he struck out wildly in his struggles. The captain, hearing the noise, came on deck, and, looking over the side, saw his pig slowly drifting astern in the sparkling water whose deep blue, speckled with gold, made one almost envy the poor little pig his involuntary bath. "By God," said the captain, "I paid three dollars and a half for him; I wonder can we save him!"

Carried away by the excitement of the moment, I so far overstepped the bounds of ship discipline as to suggest a speedy trial to save the animal's life.

This was unfortunate for the pig, for the captain, instead of heaving the ship into the wind and lowering a boat, as I had suggested, hesitated a moment, and then, thinking, perhaps, of the three dollars and a half as weighed against the amount of very pardonable pride that would necessarily be sacrificed—for the captain was an excellent sailor and needed no advice—he compromised the matter in his mind by calling all hands to wear ship. As every one was at almost every place except where he ought to be, the men were a little slow in getting to their places at the braces, and, in spite of the fact that the mate was sent aloft in the mizzen top to keep a sharp watch on the pig, by the time the ship had come up on the other tack the porker had disappeared forever.

The vessel cruised back for a couple of miles, and then squared away again on her course. The mate came down from the mizzen top wearing a smile of victory on his unhandsome face that peculiarly emphasised the singleness of his solitary tooth. He did not like pork.

For some moments the captain gazed sadly back on his vessel's wake, and then, as the long line of disturbed water increased in length until its end disappeared on the horizon, he muttered: "I paid seven dollars and a half for them two pigs."

That was all; but the tone of sadness in that deep, tempestuous voice sounded like the sorrowful murmuring of the sea when it washes over the whitening ribs of a lost ship.

Yesterday it was calm and foggy as usual in the morning, but about noon it cleared off and heavy banks of clouds appeared on all sides. The wind danced around the compass for a little while, and then set in from the south. At 12 o'clock it was blowing hard enough to give the ship good steerage way, and at 2 it was sending her plunging along at the rate of twelve knots an hour.

Pretty soon the mate concluded that it was about time to shorten sail, and had just given the order to take in the main royal when the mizzen top-gallant sheet parted with a loud crack and the lanyard and block came down on deck, the heavy block just scraping the skin off the mate's forehead as it grazed him in its fall. Several men sprang into the rigging to go aloft and secure this sail before it slatted to pieces, and those on deck had just got the weather side clewed up when the lee clew parted and left the sail all flying like a flag in the breeze. But after a short struggle the canvas was secured and things on the mizzen were getting into shape when the fore top-sail burst in the middle and began thrashing about at a great rate.

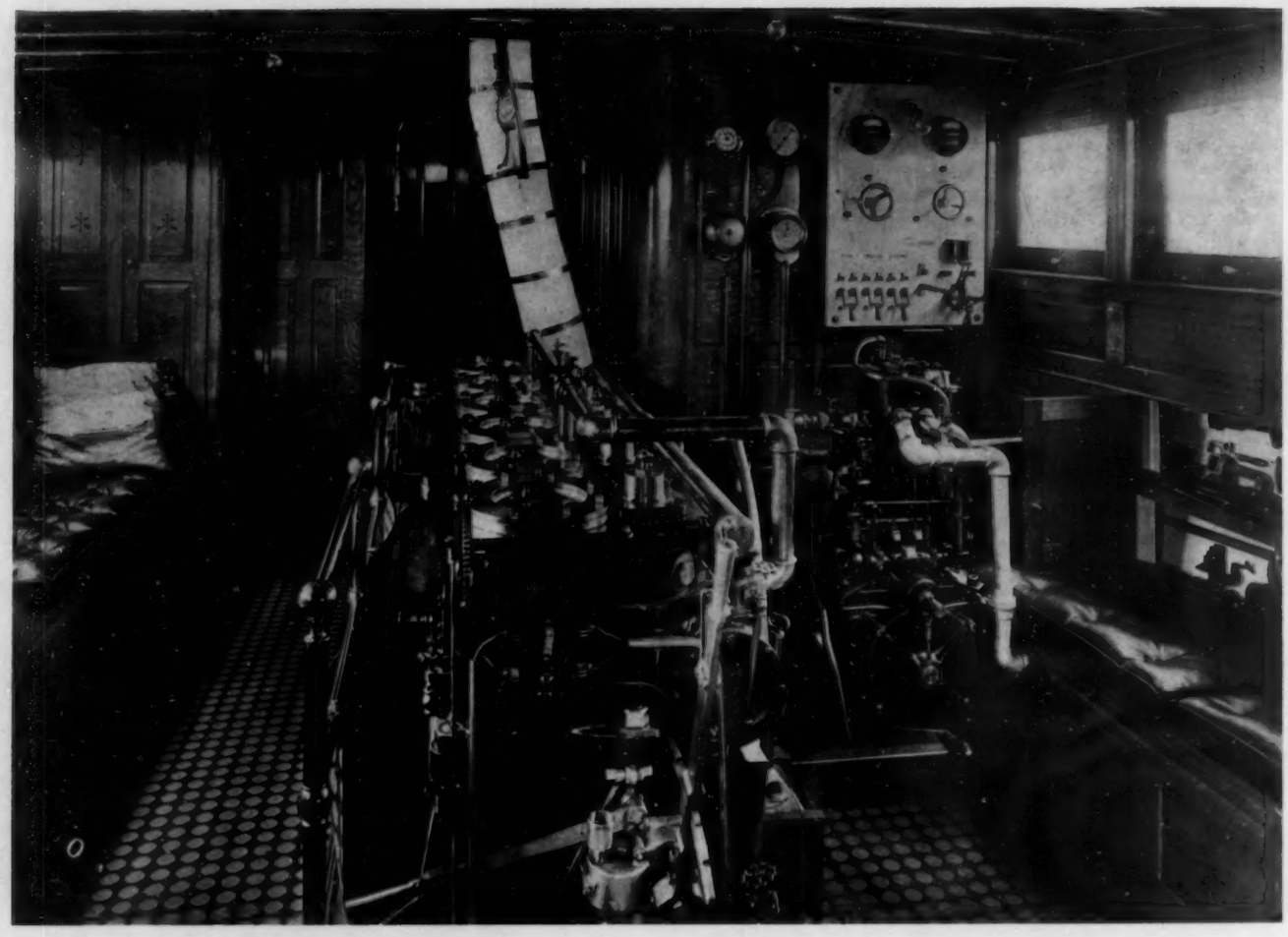
The ship was held up steadily to the breeze, on the port tack, and drove along to the westward through the seas that flew over her in spray at a rate that was quite hopeful to everyone on board. It took all of the afternoon that was left, however, to straighten up the gear forward and bend an old fore top-sail while the sailmaker got to work at the rags left from the other one. By night-

"TOWARD NOON A FINE AMERICAN SHIP OUT OF SALEM PASSED TO STARBOARD."

fall the wind had died out to a gentle breeze, and left the ship to wallow about all night under top-sails, while the sea broke over and roared about the deep, overloaded decks with a thunderous rushing that made sleep impossible. As this was my job forward, I was quite worn out hanging on to that top-sail yard for two mortal hours.

To-day the weather has been calm, but towards evening the breeze blew enough to allow the ship to make some westing.

(To be continued.)



ENGINEERS' QUARTERS ON THE 74-FOOT SUSQUEHANNA. THE ARRANGEMENT AND FITTINGS OF THIS ENGINE ROOM COMPARE FAVORABLY WITH THOSE OF A GOOD-SIZED STEAM YACHT.

The Evolution of the Engine Room

IN THE OLD DAYS OF NAPHTHA LAUNCHES THE LOCATION OF THE "POWER" WAS BY NO MEANS A MATTER OF CHOICE—THE ADVENT OF THE INTERNAL COMBUSTION MOTOR, HOWEVER, IN ADDITION TO OTHER ADVANTAGES, ADMITTED OF INSTALLATION AS THE GENERAL DESIGN OF THE HULL MIGHT SUGGEST

By K. E. TREADWELL

Photographs by Edwin Levick and James F. Hughes & Company

IN the early days of power boating, the engine room was at the after end of the craft, under the cockpit awning or standing roof, and in it was installed an engine using naphtha, both as a fuel and as the expansive liquid from which was generated the vapor which actuated the piston of the miniature steam engine.

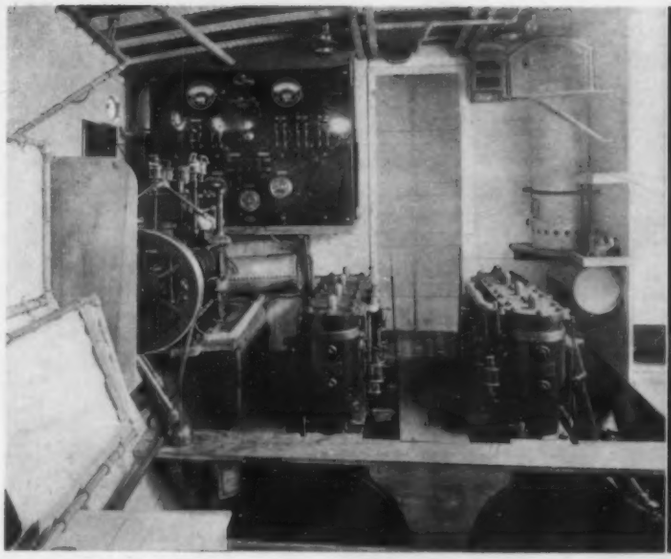
When the volatile nature of the fuel is taken into consideration, the reason for the open-air aspect of the motor space will be readily understood.

With the advent of the internal combustion engine, the sheltering of the motor, which had always been recognized as something to be desired, now became feasible, and when the jump spark came into common use, the gentle gymnastic tendencies of the high-tension current rendered it still more of an advantage.

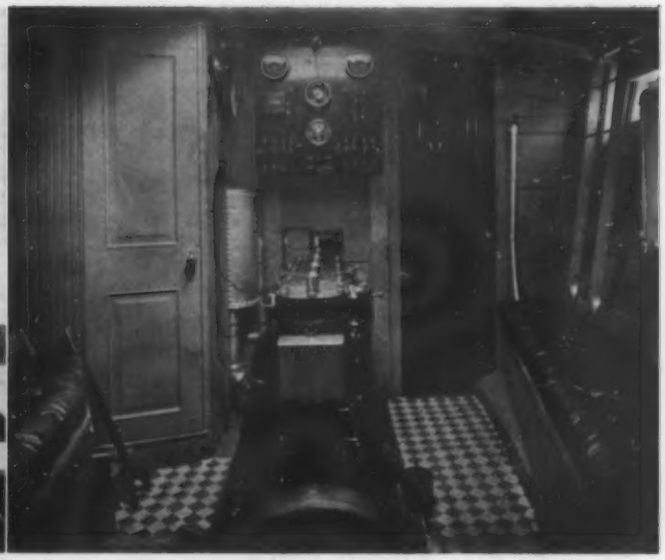
Commencing in a modest way at the rear or central portion of a glass cabin launch, or a small space stolen from the cabin of the trunk cruiser, the engine room of the motor craft has to-day assumed an importance in arrangement and equipment totally unthought of a few years ago, except in connection with steam-propelled craft of the larger size.

The facility with which the internal explosion motor may be crowded into small space has been somewhat of an inducement to the boat owner to consider the engine room as just so much available space for the cooking and storing of food, a crew's quarters; and, whenever extra storage space has been required, it has been the general tendency aboard the smaller craft to chop it off from the engine room.

To a certain extent, this was the effect of a reaction from the



A PLAIN AND BUSINESS-LIKE COMPARTMENT IN THE 67-FOOT NORKA, A GOVERNMENT INSPECTION CRAFT.



THE 57-FOOT DOLPH GIVES SLEEPING ACCOMMODATION FOR FOUR IN ENGINE ROOM.

practice of steam-power days, when the engine and boiler room space and the coal bunkers were of stern necessity prominent features to be reckoned with, before any of the other accommodations could be laid out.

Going to the other extreme, with the gasolene motor it was long considered that any place was good enough for the engine room, provided it was somewhere within the limits prescribed by the necessary angle of the shaft.

But the day of that extreme is gone, and the engine room of power craft is assuming an importance in arrangement and equipment more in keeping with the fact that it is the heart and lungs of the boat. The introduction, one by one, of such luxurious accessories as acetylene and electric lighting plants, pressure, air whistle and starting apparatus, has made it necessary that the modern engine rooms have sufficient area to accommodate to advantage not only the propelling outfit, but such accessories as switchboards, pressure and generating tanks, and in the case of the larger boats, auxiliary engines for such purposes as running the dynamos, filling pressure tanks and pumping out the bilges.

Without pretending to rival them in size, the engine rooms of some of our American power boats equal in finish, completeness and convenience the same compartment of the ocean-going steam yacht.

Next in importance to the engine itself is the apparatus by which electric current is generated for ignition and illuminating the boat.

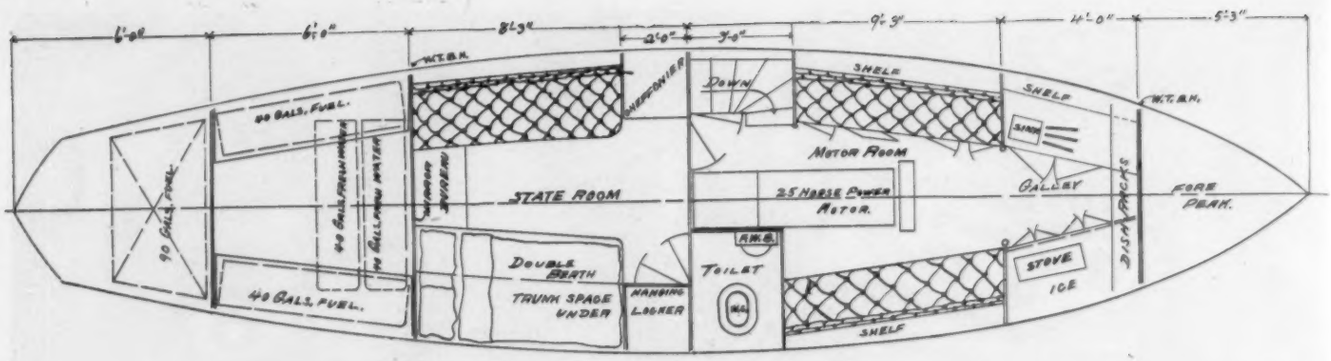
On the smaller boats the generator is connected with the propelling engine, but on the larger craft an auxiliary motor is frequently installed for the purpose.

The advantage of the auxiliary engine is that, when not under way, a small consumption of fuel for the independent engine will charge the storage batteries and illuminate the boat just as well as the large engine, with its greater fuel consumption, can do the work.

With storage batteries, taking the "juice" from the generator, it is possible for a boat to be electrically lighted with either a

ENGINE ROOM OF 60-FOOTER IDAHO, SHOWING ARRANGEMENT OF MOTOR, DYNAMO, CREW'S BERTHS, GALLEY AND SINK.

SEMINOLE'S ENGINE ROOM. HOW A 55-FOOTER STOWS ENGINE AND ENGINEER, AND UTILIZES THE REMAINING SPACE FOR EQUIPMENT.

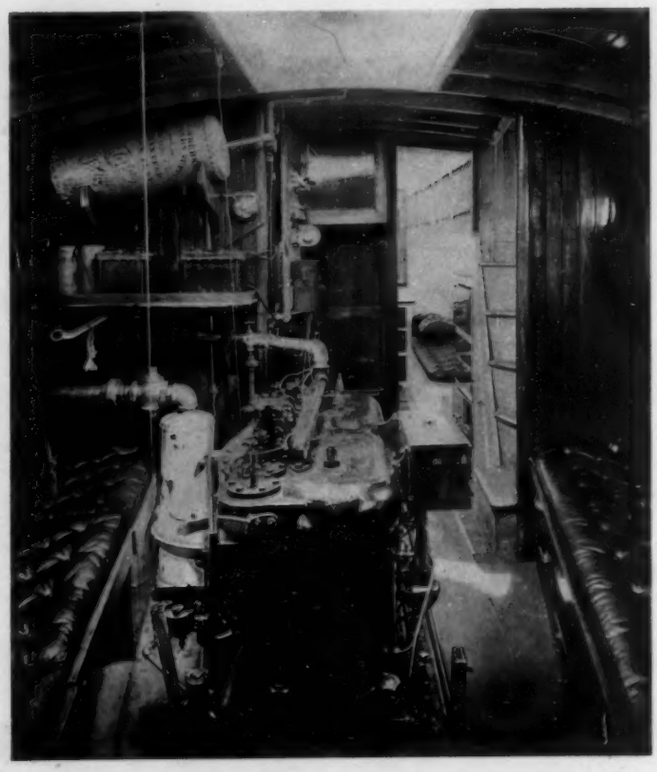


very slight drag on the main engine or by means of an auxiliary of small horsepower, sometimes as low as two or three. For the storage battery conserves the current, taking it up little by little, to give it out again in large or small quantity, as may be required.

That the electrical apparatus may be handled to best advantage and the quantity of available current supply always be known, a switchboard with connections, ammeter and volt meter should be installed.

Such an arrangement lends a most imposing effect to the engine room, as may be observed in the illustration of the engine department aboard Dolph, Norka and Susquehanna.

The interior view of the 57-foot Dolph shows a neat, compactly arranged motor room, wherein is installed a 4-cylinder, 4-cycle engine, whose lighting and ignition system is supplied with current by a generator connected with it.



A WELL-ARRANGED ENGINE ROOM ON A MODERATE-SIZED CRUISER. MOTOR COMPARTMENT OF 39-FOOTER KITTROIS.

Though small, the engine room possesses a full equipment of signals, in the shape of gong, jingle bell and speaking tube, and the engineer may gain the deck in an instant by the ladder on the port side.

On board the 67-footer Norka, a government inspection launch, the utmost simplicity prevails in the engine room. Between the twin 4-cylinder engines the space is bridged by a raised platform, a second bridge gives access to the auxiliary motor and to the electrical switchboard, while a third bridge leads over the flywheels.

A hot water plant occupies the after port corner of the compartment and three pipe berths, swung up out of the way in day time, accommodate the crew at night.

A great deal in the way of machinery is crowded into very small space, and the quarters are very shipshape, but not particularly ornamental.

The Susquehanna's engine room may well serve as an example of luxurious surroundings and equipment.

Her 6-cylinder, 100-hp. engine exhausts through the stack, which is asbestos-sheathed and brass-strapped.

The engine itself is surrounded on three sides by a heavy brass railing, and the linoleum-floored engine room is finished in panelled mahogany. The locker doors are ventilated, and the drop sash windows make the compartment cool and pleasant.

When the engineer is at his controlling lever, he faces the engine room telegraph, the signal bells, and his clock and the gauge, which latter indicates the amount of compressed air in the tank.

Within easy reach is the auxiliary lighting plant, consisting of a single-cylinder motor, directly connected to the dynamo. Shallow closets between the side panelling and the skin serve to hold tools, where they are readily accessible.

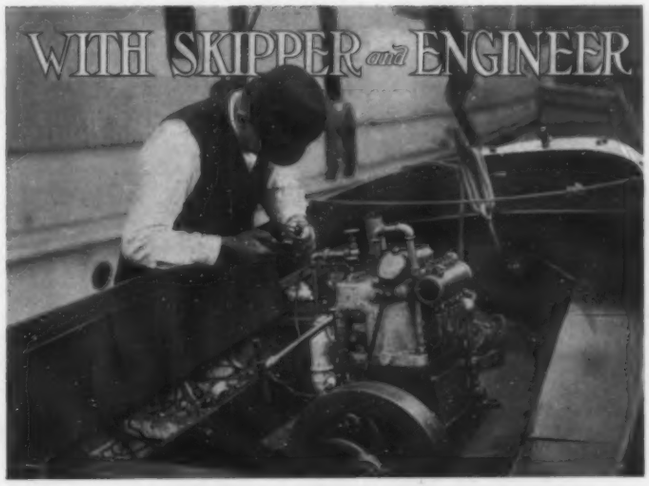
The engine room of the 39-footer Kittrois occupies the forward portion of the boat and, although the craft is of only moderate size, it is separate from the galley.

The motor room, in fact, between bulkheads, is greater in length than the main cabin, and is so arranged as to constitute a very prominent feature of the craft.

Her 4-cylinder, 25-hp. engine occupies the center after portion of the compartment. There are extension transoms on each side, and the walls of the toilet, on the engine room side, are utilized as space upon which to hang the compressed air tank and switchboard, as well as a support for the shelving, upon which rest the storage and dry batteries.

The large ventilating skylight, directly over the engine, adds much to the attractiveness of this portion of the little cruiser.

In direct contrast to the arrangement of Kittrois is that of a recently built and much larger craft, wherein the engine room is fully as much galley as motor compartment, where coal-burning ship's range, hot water heater, refrigerator, pump and sink contest for supremacy with the 4-cylinder, 24-hp. motor, which stands scornfully in the center of the compartment, as if impressed with its own importance, and wondering in its secret soul as to how it got into such plebeian society.



Getting Home with a Crippled Engine

IN case of damage to one cylinder of such sort that it cannot possibly be tinkered afloat, the only thing to do is to give that cylinder as little negative work as possible and to limp home with the other cylinders. For this purpose, the plug over the exhaust valve of the useless cylinder, also that over the inlet valve, if the latter is opened mechanically, should be taken out, and a little oil put on the piston to reduce its friction as much as possible. In case there is time to do so, it will be well to open the hand-hole in the crank case and disconnect the connecting rod from the pin. This permits propping the piston up clear of the crank shaft, and saves the friction absorbed by the piston rings. If this is done, extreme care must be taken to secure the piston and the connecting rod clear of all the moving parts, and to do this so thoroughly that they cannot possibly shake loose and wreck the engine by getting in the way of the crank shaft.

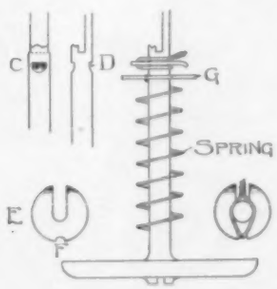


FIG. 1.—PATCHING UP A BROKEN AUTOMATIC INLET VALVE. VALVE OPENS DOWNWARD.

When the Mechanical Lubricator Fails

If owing to stoppage of the oil pipe, or to breakage of such pipe, the mechanical lubricator ceases to feed to one of the cylinders, it is safest to cease feeding all the cylinders from that source of supply and to pour enough oil into the crank case to insure lubrication by splash. This, of course, on the assumption that the oil supply is sufficient for that purpose, since it may take considerable oil to fill the crank case to the required level. The reason for this procedure is that it is generally useless to try to feed oil by gravity to a piston, as for example by disconnecting the pipe from the lubricator and sending oil into it from a squirt can. The pressure of the gas working past the piston rings will blow the oil out of the pipe, unless the latter be large enough to allow the gas and oil to travel in opposite directions. When the supply is scant, it is possible to put fresh water into the crank case to float the oil, unless a circulating pump takes oil from the bottom of the crank case, which condition is not likely to arise in the case assumed. Another expedient would be to disconnect the oil pipe from the cylinder and screw in a threaded nipple and an elbow which would permit gas to escape without carrying the oil with it. If a few inches of one-eighth or one-fourth gas pipe were screwed into the elbow, sufficient oil could be poured in to feed the cylinder for a reasonable length of time.

If a Valve Spring Breaks

When a valve spring breaks, the two parts of the spring will run together like the threads of a screw, unless they are kept apart. A washer interposed between them affords an easy way out of the difficulty. To disconnect an exhaust valve spring from the valve stem the easiest procedure is as follows: turn the engine over till the valve is opened, and prop up the spring retaining washer with a pair of sticks whose ends are supported on any convenient surface under the valve; then turn the crank again till the valve lifter comes down, and push the valve down after it. This leaves the spring retaining washer in its raised position, and makes it easy to pull out the key which passes through the valve stem and holds the washer. The props are then knocked away. To replace the spring it must first be compressed in a vise if possible, and bound in that condition with two or three soft iron wires. It is then easy to put the spring and its retaining washer and key in place, after which the wires are cut and the spring permitted to expand. If there is no vise available, it becomes necessary to compress the spring by degrees, by means of twisted loops of wire or cord which are passed lengthwise through the spring and their ends brought together outside.

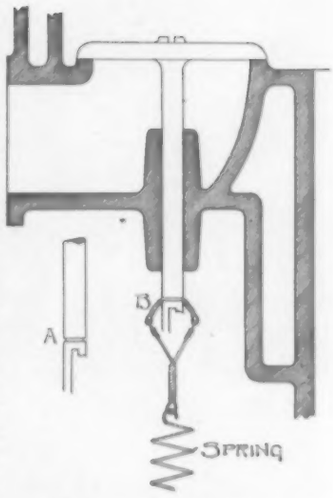


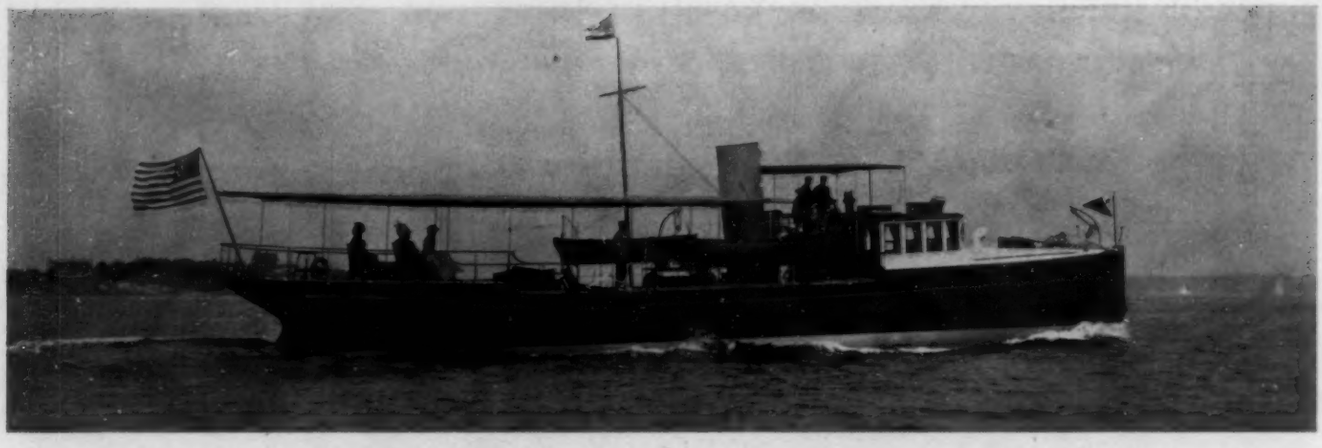
FIG. 2.—ATTACHING A SPRING TO A BROKEN INLET VALVE. VALVE OPENS UPWARD.

When an Automatic Inlet Valve Stem Breaks

Automatic inlet valve stems have a way of breaking occasionally, where they are weakened by the slot for the key. If the valve opens upward, as frequently in marine engines, the spring is probably exposed to view. It is then easy to file a notch all around the spring, as shown at *A* in Fig. 2, and to twist an iron wire around the notch. This can be arranged to have two loops on opposites sides of the stem. See *B*. A string or wire can be put through these loops and any convenient spring, for example the inlet valve spring itself, is thereby connected to the loops and used for tension, its lower end being anchored to anything handy. The spring should be stretched to give it about the same tension as when it was compressed.

Reversing the Engine

Practically all two-stroke motors are reversible, that is, they will run in one direction as well as in the other, and many are fitted with a timing device, by means of which a motor may be reversed while running. But it requires considerable skill on the part of the operator to do it successfully, and even then it is far from infallible. Besides, to reverse an engine continually means trouble. Broken cranks, sheared pins and keys, cracked flywheels and cylinder heads are some of the possibilities. Therefore use a reverse gear which is positive and does not bring such an excessive strain on the engine. It will save accidents and probably serious repair bills, as well as other troubles. Any man who has operated a motorboat for a year will tell you that it pays to observe this suggestion.



THE 90-FOOTER VIATOR, WHOSE POWERFUL HULL, FUNNEL AND DECK ARRANGEMENT GIVE HER THE APPEARANCE OF A SMALL STEAM YACHT.

Viator, a Ninety-Foot Gasolene Yacht

Photographs by N. L. Stebbins and W. B. Jackson

IN the Viator, designed by Cox & Stevens for Mr. Merrill Hunt, of Boston, Mass., a practically new type of power boat has been brought into existence.

Her straight stem, elliptical stern, great water line and full deck line, which affords a surprising amount of room both above and below deck, all combine to give her a strong resemblance to a small steam yacht, which to all intents and purposes she is, as far as model and accommodations are concerned.

The fact that her owner was a yachtsman who had had large experience in the use of steam yachts of moderate size in Eastern waters, was responsible for the bringing into being of this motor cruiser on deep-water steam yacht lines, and in her he has a craft combining good cruising accommodations with fair speed and extremely good seagoing qualities.

Viator's dimensions are as follows: 90 feet over all; 85 feet water line; 14 feet 6 inches beam; 6 feet draft.

She has a 100-hp. Standard 6-cylinder engine, which gives a cruising speed of 12 miles per hour on a continuous run, and she can maintain this speed for days at a time.

The boat has ample free board and is painted black to the rail line. The house, which resembles in appearance the regulation steamer yacht pilot house, is painted white, as is also the forward turtle deck. The powerful hull will be appreciated after a study of the cross-section, which is illustrated by the diagram on a following page.

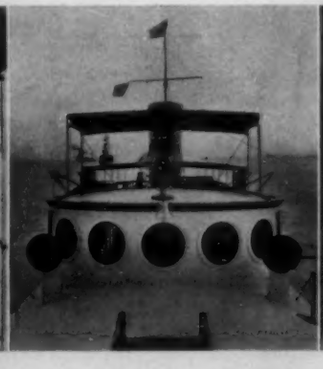
Beneath the turtle deck are located the crew's quarters, entered by means of a hatch in the forward deck. Immediately below is a fresh-water tank of 800 gallons capacity. Aft of the forecastle and entered from it by a flight of steps is the galley, with locker, sink and dresser on the port and icebox and a large dresser on the starboard side, and with a ship's stove at the center of the after bulkhead. Directly over the galley is the deck house dining-room, with drop sash windows at the sides and heavy, round port lights at the forward end. A stairway leads from the deck house on the port side to a vestibule, connecting with the cook's pantry forward and with the owner's stateroom aft. Aft of the deck house is the raised steering bridge, underneath which is a large skylight over the owner's stateroom.

In the cook's pantry are a closet, a sink and a dumbwaiter, by which food is hoisted to the dining-room above. Forward of the owner's stateroom and between it and the galley is a large private bathroom, with a full-size tub and a large clothes closet. The owner's stateroom extends across the full width of the boat and has a fixed berth on each side with drawers underneath, a bureau stands at the center of after bulkhead, and at the foot of each berth is a closet.

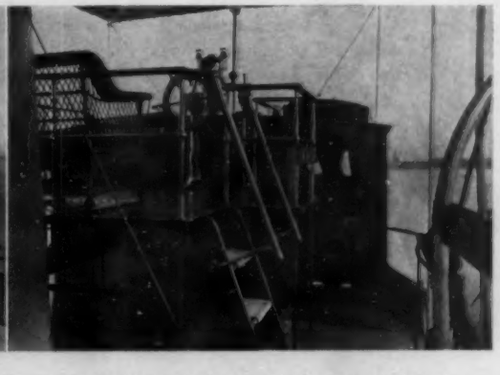
Aft of the owner's stateroom and entirely separated from the rest of the boat by water-tight bulkheads, fore and aft, is the engine room.

At the after end of the engine room and extending to the deck are three gasolene tanks of 400 gallons capacity each. A ventilating dummy stack is directly over the forward end and a

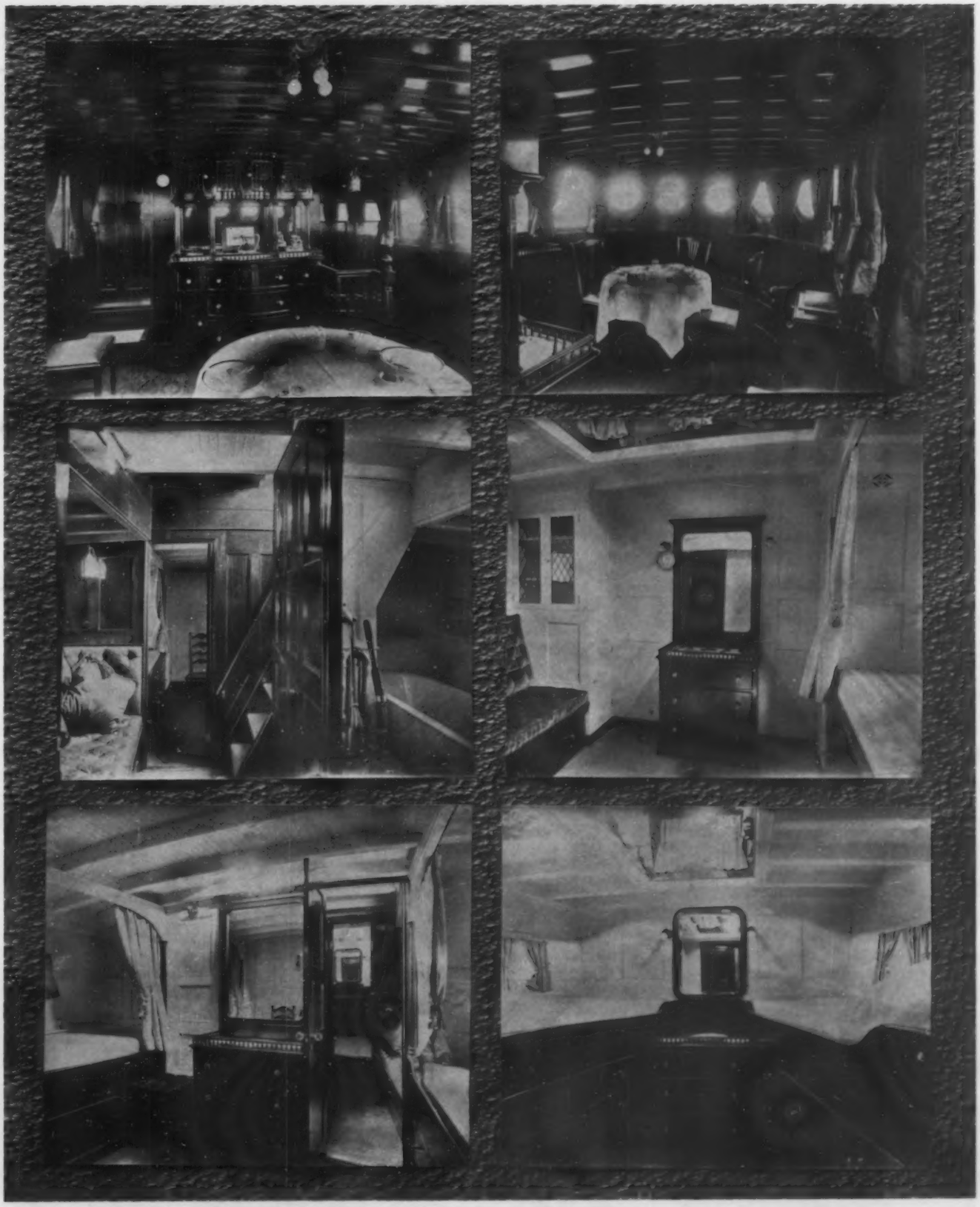
DECK LOOKING FORWARD. THWARTSHIP COMPANION IN CENTER LEADS TO LOBBY.



TURTLE DECK LOOKING AFT, SHOWING FORWARD END PILOT HOUSE.

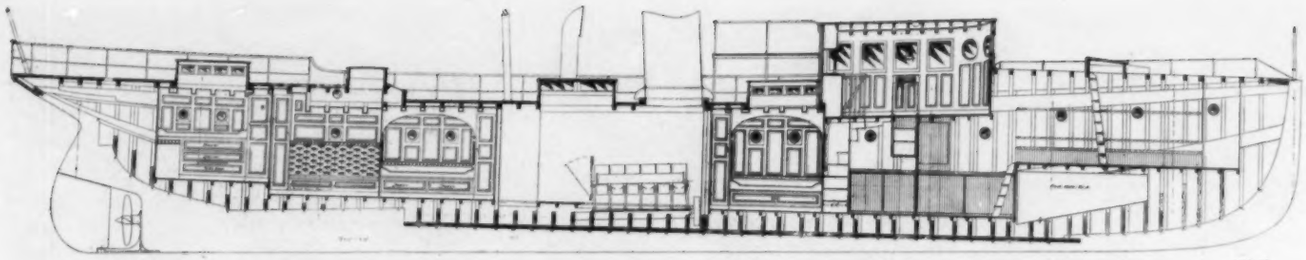


BRIDGE AND ENTRANCE TO DECK HOUSE ON STARBOARD SIDE FORWARD.



INTERIOR VIEWS OF VIATOR.

Deck Dining Room, Looking Aft.
Lobby, Looking Forward. Bathroom on Starboard Side.
Forward Guests' Room, Looking Aft.
Deck Dining Room House, Looking Forward.
Owner's Room, Looking Aft. Bed on Port Side. Settee on Starboard Side.
After Double Stateroom.



large skylight is situated over the after end of the engine room.

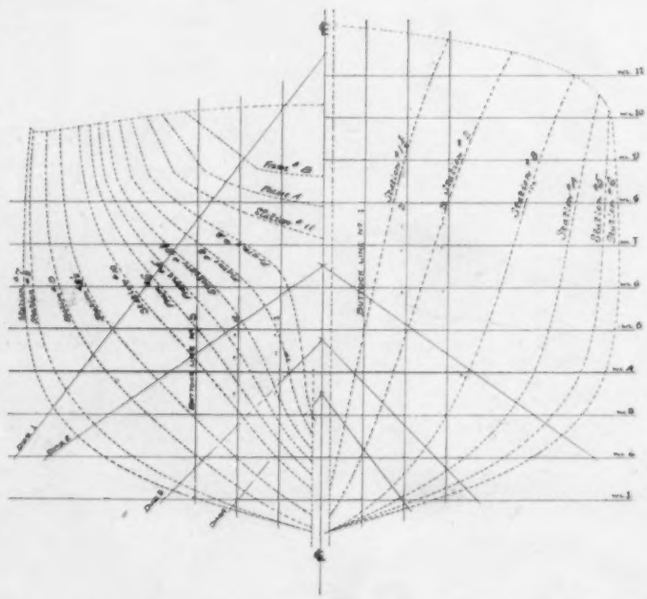
Behind the engine room is a double stateroom, with a 30-inch berth, with drawers underneath on each side.

At the head of each berth is a clothes closet and on the forward bulkhead of this stateroom is a plate-glass mirror with lights on each side. At the center of the after bulkhead is a bureau, on the starboard side of which is a combination seat and shoe box, and on the port side there is a swing door leading into a lobby, from which the after companionway stairs give access to the deck. On the port side of the lobby is an extension transom, which can be made into a berth. There are drawers underneath this transom and a closet at its after end.

On the starboard side of the lobby is a bathroom. At the after end a door leads into a double stateroom, with a berth and clothes closet on each side. There are drawers underneath each berth, and a bureau fills the space at the after end of the stateroom between the berths.

A skylight of the same dimension as that over the owner's stateroom is set in the deck directly over this after cabin.

As will be noticed, the boat is particularly well arranged for rough-water cruising. The deck house dining-room sets well below the level of the forward turtle deck, and her engines and fuel tanks are located at the center of the hull, thereby giving buoyancy to both bow and stern, allowing her to ride well in a heavy sea. The weight of engine and water tank is kept low, and the turtle deck, in connection with the raised floor of the forecastle, gives a good amount of head room, combined with a practical amount of floor space, which could not be obtained by any other method in this portion of the craft. Her engine room is absolutely isolated from owner's and guests' quarters, precluding the possibility of any odor penetrating to them. She has a good free board, and the wise expedient of sinking of the deck house in the deck prevents its having an ungracefully high appearance.



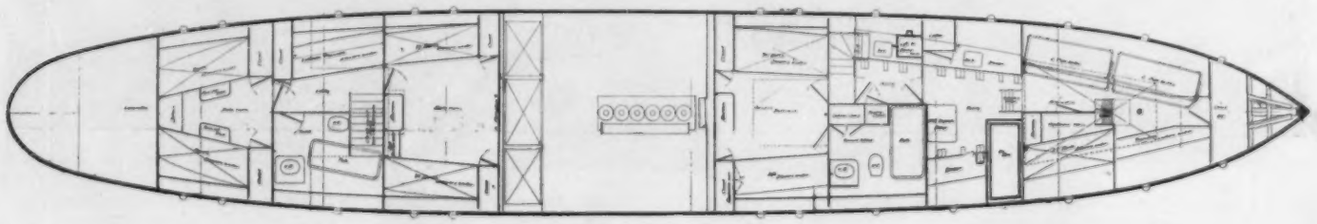
The interior views on the opposite page show the combined comfort and elegance of "Viator's" accommodations. The deck house dining-room is well lighted and airy, and at the same time the round port lights, set into a semi-circular forward end of the house, furnish protection when running into a head sea.

As a matter of fact, the sharp curve of the turtle deck forward really renders but little protection of this nature necessary, but the arrangement of the forward windows certainly adds greatly to the feeling of security.

The photographs illustrate most graphically the amount of room which the full body of her lines allows. Even the lobby—the overflow stateroom—it will be noticed, is quite a comfortable and well-furnished craft. The forward guest stateroom, as will be seen by the view of this compartment looking aft, is a cabin, which, as far as space and equipment are concerned, might be that on a steam-powered yacht of 50 per cent. greater over-all length than that of "Viator."

The semi-circular upholstered sofa running around the forward end of the dining room, the little writing desk on the starboard side, the dresser on the port, and the cosy table in the center add to this room an appearance of homelike comfort, while the convenient connection with the galley beneath adds much to the comfort of the diners and the convenience of the chef.

The owner's room, finished in white enamel, with a large double bed and the settee, which may be also impressed into service for sleeping purposes, is furnished with an abundance of light and air. It is more than liberally supplied with closet room, and, in addition to the bureau, which stands against the after bulkhead, the large drawers under both berth and settee may be counted upon to furnish all the storage space that any reasonable demand could require. There is ample living room for a crew of six.

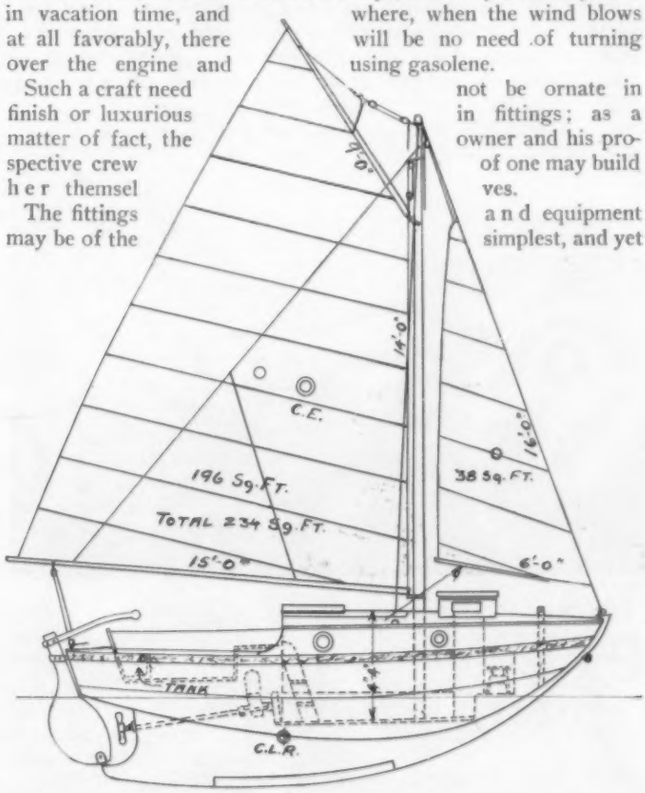


Sixteen-Foot Water Line Auxiliary Sloop

ALL of the fun in yachting is not confined to those who can afford cruising schooners and the big power boats. There is a large and growing class in this country composed of those whose ambitions are large, but whose means are quite moderate, and they are the ones who, when they do engage in any sport, really seem to get a tremendous amount of enjoyment out of it.

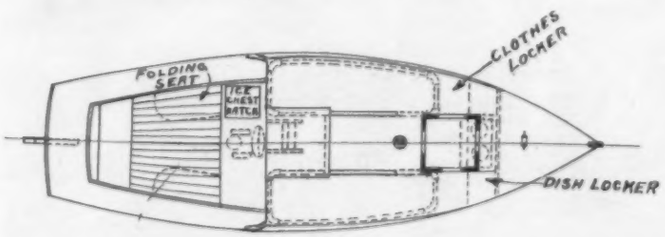
There are many waters whereon an auxiliary craft of moderate size, moderate sail area and moderate power, and, moreover, moderate cost, could be used on holidays, Saturdays, Sundays and in vacation time, and where, when the wind blows at all favorably, there will be no need of turning over the engine and using gasolene.

Such a craft need not be ornate in finish or luxurious in fittings; as a matter of fact, the owner and his prospective crew of one may build her themselves. The fittings and equipment may be of the simplest, and yet



the little craft will pay a tremendous amount of dividend in the way of enjoyment on the money and labor invested.

It is far easier, however, for an amateur to construct such a craft than to design her, and that's why we illustrate the plans of the 16-footer herewith. In the May issue of YACHTING were



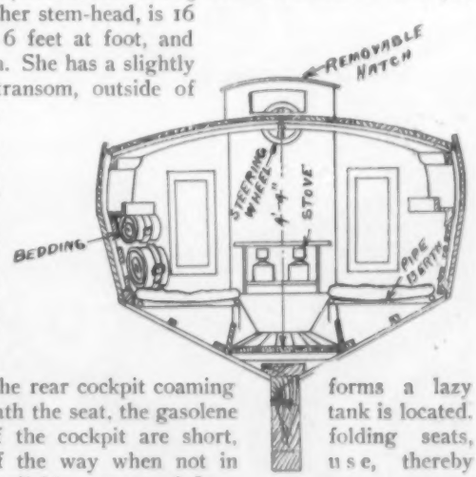
published the plans of a proposed 19-foot water-line auxiliary cat as designed by C. H. Dodd, of Boston.

Their appearance awakened so much interest that we herewith illustrate lines, sail and accommodation plans of a 16-foot water-line auxiliary sloop, as worked out on paper by the same designer.

She is built on the skip-jack model, with a heavy keel and a slight tumble-home to her top-sides.

This plan makes construction a fairly easy proposition for an amateur skilled with tools; but, within the necessarily limited space allotted to her cabin accommodations, she is a very complete little vessel.

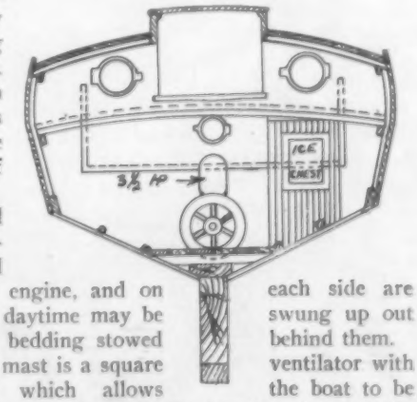
She is 16 feet on the water line and 20 feet 6 inches in length over all, and draws 3 feet 3 inches of water. She has 2 feet 8 inches free board at the bow, and 23 inches at the stern, and her greatest beam at gunwales is 7 feet, and on the water line 6 feet 2 inches. Her total sail area is 234 square feet, divided between a mainsail of 196 and a jib of 38 square feet. The mainsail is 8 feet on the gaff, 14 feet at luff and 15 feet on the boom. Her jib, which sets from her stem-head, is 16 feet at the luff, 6 feet at foot, and carries a jibboom. She has a slightly raking, square transom, outside of which a rudder is hung, and, when under canvas, she steers with a stick.



Her cockpit is 6 feet 6 inches in length, with a square after end, across which is a broad stern seat, for which the rear cockpit coaming forms a lazy back. Underneath the seat, the gasolene tank is located. At each side of the cockpit are short, folding seats, dropping out of the way when not in use, thereby increasing the available amount of floor space.

Across the forward end of the cockpit there runs a bridge, underneath which is installed a 3½-horse-power, single-cylinder, two-cycle engine. Beneath the port side of the bridge is the ice chest, with hatch through the bridge for loading purposes, and a door, opening into the cabin from the forward side of the after bulkhead, allows access to the interior of the larder without going outside.

The cockpit is self-bailing, and the height of the bridge floor above the engine cylinder-head allows plenty of room for tinkering with the motive power. The raised deck, which houses the cabin, gives accommodation space right up to the bow of the boat.

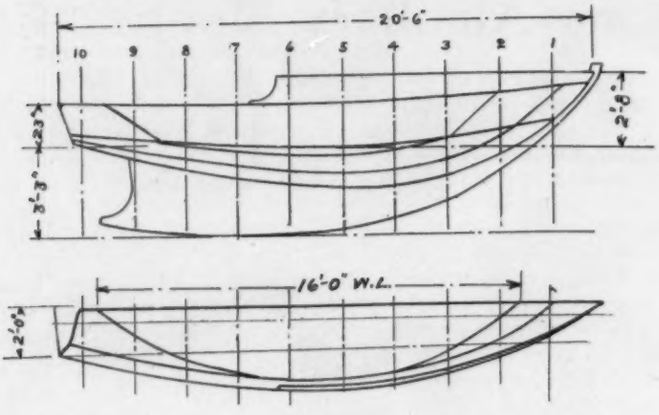


The cabin is entered by a central companionway and hinged steps forward of the engine, and on each side are pipe berths, which in daytime may be swung up out of the way, with the bedding stowed behind them.

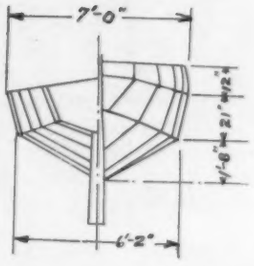
Just forward of the mast is a square ventilator with a removable hatch, which allows the boat to be steered from an auxiliary wheel from the interior of the cabin, forming, in fact, a miniature pilot house.

Just forward of this hatch the cabin floor is raised to accommodate the galley stove.

There are several rather meritorious features in the way of interior furnishings as brought out by the designer. One of these



is the arrangement of the bedding at the back of the pipe berth so as to form a comfortable seat back when the berth is used as a transom. The device by which, as a motor boat, she may be steered from a miniature pilot house, and, as a sloop, by the regulation tiller, is another good point.



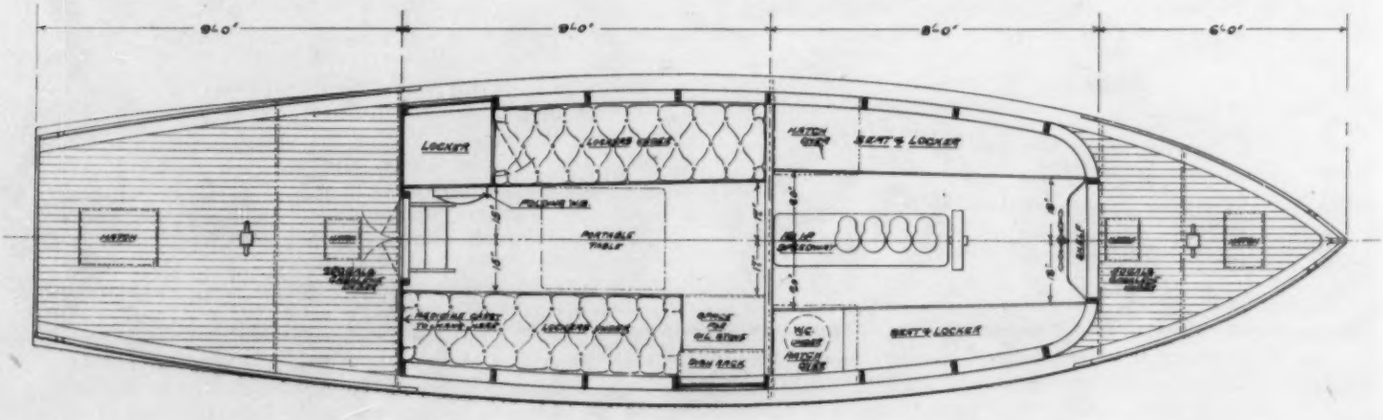
For so small a craft, she is well provided with both clothes and dish lockers, and there is ample space in the extreme bow for a chain locker and general storage. Of course, in a craft as small as this, head-room is necessarily rather limited. In this case it is 4 feet 4 inches from floor to the center of deck.

She should be a handy little boat, able to give a good account of herself under canvas, and, with a 3½-horse-power motor, to get along at between 5½ and 6 miles per hour. She has ample accommodation for two men to live aboard comfortably, and, with plain finish, she should be turned out at a figure well within the means of an enthusiastic couple who want something in which to live and knock about.

PELICAN, SHOWING HOW THE TUNNEL STERN TAKES AND HOUSES A LARGE PROPORTION OF THE PROPELLER BLADES, AND ALLOWS OF A LIGHT DRAFT WITH A GOOD WHEEL DIAMETER.

Pelican, a Tunnel Stern Launch

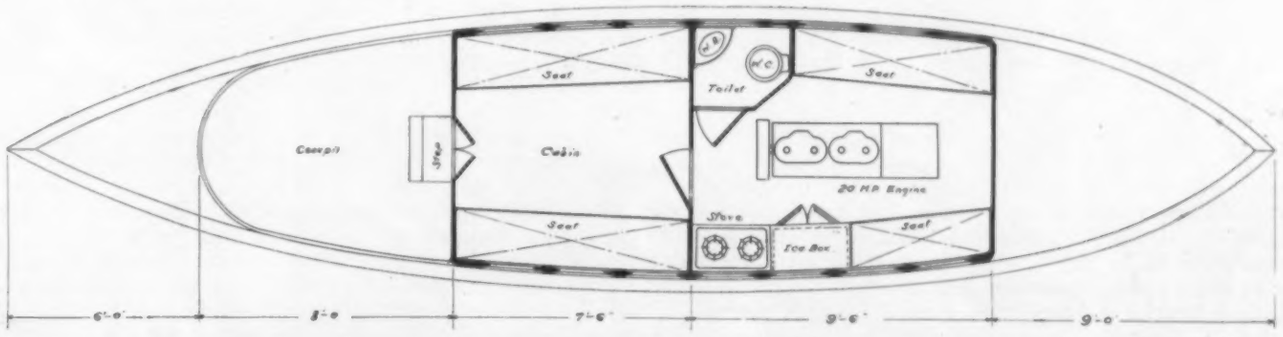
PELICAN, designed and built by the Gas Engine & Power Company and Chas. L. Seabury & Company, Con., of Morris Heights, New York City, for Archdeacon Hudson Stuck, of the Domestic and Foreign Missionary Society of the Protestant Episcopal Church, contains several novel features in both hull and cabin arrangement. She is 32 feet over all, 8 feet on the beam, and draws but 16 inches of water. Although she has a four-bladed propeller 18 inches in diameter, the light draft—less than the diameter of her propeller wheel—is obtained by means of a tunnel stern, which houses the upper portion of the propeller blade above the water line. The shaft emerges directly from the deadwood into this tunnel space, and the rudder is so



hung that its after end is just a trifle short of being in line with the straight stern post.

The motor is a 4-cylinder, 4-cycle Speedway gasolene marine engine of 16 hp. and latest design. The ignition is the make and break, with Bosch magneto. Engine and control are situated in the forward compartment, which is 8 feet in length, and serves as a combination engine room and pilot house. The after cabin, 9 feet in length, contains two 7-foot transom berths with lockers underneath; a large locker at the after part of the port side, with a dish rack and space for a stove at the forward end of the starboard side. These berths, together with a seat locker in the engine room, give sleeping accommodations for four persons. The cabin windows are arranged to slide in water-tight pockets. The gasolene tank, under the after deck, contains 200 gallons, and there is one of 50 gallons capacity under the forward deck. Stowage space under the forward deck, between the bow and the tank, is reached by a hatch. There is considerable deck room aft, as the boat has a square transom stern, 5 feet wide at its extreme after point. A portable canvas awning supported by wooden stanchions shelters the rear deck, which offers a floor space equal to that of the after cabin and adds considerably to the carrying space of the craft. Pelican was shipped from Morris Heights to Alaska, where she will be used on the Yukon River and its tributaries, the Tonana, the Kobek, the Koy, Ukay, and the Porcupine, the latter three being north of the Arctic Circle.

With such a craft it will be possible to reach the people along the Arctic Circle and north of it when it is impossible to visit them by dog sleds. When she leaves on her summer journey, Pelican will have on board a general surgical kit and the equipment of a medical dispensary. No paid hand will be employed on the boat, which will be run by a crew of two, consisting of Archdeacon Stuck and Dr. Grafton Burke.



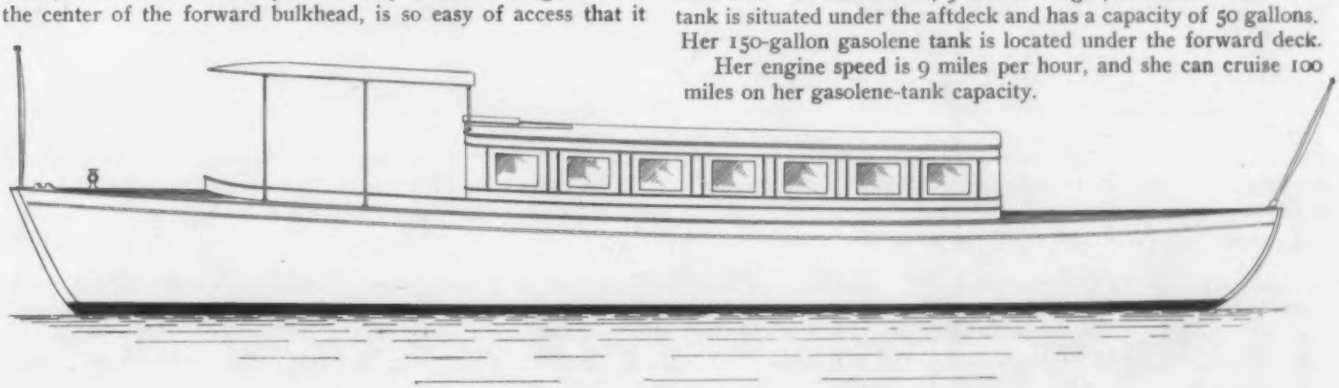
Traho, a Forty-Foot Day Boat

THE Traho, designed and built by the New York Yacht Launch & Engine Co. of Morris Heights, N. Y., for W. E. Roosevelt of Oyster Bay, is a radical departure from the conventional type of motor boat, in so much as the cockpit, usually situated at the stern, is, in this craft, transposed to the bow, and the cabin may be considered as of secondary importance, to be utilized only in bad weather. She is 40 feet over all and has 3 feet draught, her beam is 9 feet and there are 6 feet 2 inches of head room in the cabin. Construction is as follows: Keel, white oak, stem and stern posts of the same material, planking of cedar, steam-bent oak timbers, all copper fastened and riveted on burrs; cabin is of oak, with bright finish outside and white enamel interior. As will be seen by the plans herewith, the 8-foot forward cockpit is covered by a permanent roof, supported on metal stanchions. A side curtain may be used when desired to protect the occupant, but as a general thing the cabin, which is conveniently reached by double folding doors in the center of the forward bulkhead, is so easy of access that it will be preferred in event of a storm or rough water.

This cabin, which is 7 feet 6 inches in length, extends across the full width of the boat and is lighted by three windows in drop sashes.

On each side of this cabin is a seat which may at a pinch be utilized as a berth. From the port side of the after bulkhead a swinging door leads into the combination engine room and galley, wherein is installed a 20 horsepower, four-cylinder, four-cycle 20th Century engine, which occupies the center of the compartment. On the port side forward is a double burner kerosene stove with locker underneath, next comes an ice box of generous capacity and then a seat for the engineer within easy reach of reverse gear and engine control. On the starboard side is another seat which, as well as that on the port side, is arranged for use as a berth. The engine room, which is 9 feet 6 inches in length, is lighted by four drop sash windows, two on each side. The afterdeck, 9 feet in length, is flush. The water tank is situated under the aftdeck and has a capacity of 50 gallons. Her 150-gallon gasolene tank is located under the forward deck.

Her engine speed is 9 miles per hour, and she can cruise 100 miles on her gasolene-tank capacity.



EDITORIAL

Published by the Yachting Publishing Co.: Oswald Garrison Villard, President; Robert M. McBride, Secretary and Treasurer.

The Winning of the British International Trophy

In the general rejoicing over the success of Commodore Schroeder's motor boat Dixie II. in defending the British International Trophy against the swiftest flyers that England could send against us it is well to pause a moment and examine the underlying causes of victory. It would be idle in the face of the pitiful showing which those who had taken it upon themselves to build defenders for the event on Huntington Bay made in the elimination trials to say that Americans viewed the outcome of the contest against Wolseley-Siddeley and Daimler II. with equanimity.

The lack of preparedness for the supreme test was so striking as, in a sporting sense at least, to constitute a cause for national humiliation. Nine boats were entered in the elimination trials, and events proved that but two of them were legitimate entries—Dixie II. and J. H. Hoadley's Den. Of the other seven it can only be said that they were withdrawn on the eve of the trials for various reasons, all of which were not clearly submitted to the regatta committee in charge, if haply they were submitted at all. Autowin II., Edwin S. Webster's 400-hp. boat, appeared for the try-outs, but broke down hopelessly. She, with Commodore Schroeder's flyer, was really built in good faith for the defense of the cup, and it is a pity that an accident, due unquestionably to haste in making her ready, prevented participation in the preliminary events. Of the others the less said the better.

Nevertheless, nothing but good can come from emphasizing the fact that success in motor boat racing, as in most things of this life, is the result of careful preparation. The date of the receipt of the challenge from England would not have been one bit too early for activity on the part of those who months later came forward with announcements that they were building boats for the defense of the cup. Commodore Schroeder seems to have appreciated this adequately. Without trumpeting his intentions to the world he went to one of the foremost American designers, Mr. Clinton H. Crane, and placed an order for a hull, at the same time ordering an eight-cylinder engine. This engine, long before it was placed in the boat, was mounted in the shops, running day after day until every peculiarity was noted, all defects corrected and the mechanism sweetened down until the man who was to operate it, when placed in the hull, was thoroughly familiar with his charge. The good results were manifest. In her elimination trial she made 25.7 knots an hour, a record which may be pronounced wonderful, inasmuch as the boat had been in the water but two days. In private she had done even better; had done so well, in fact, that those who knew had little doubt but that the much-heralded Siddeley, to say nothing of Daimler II., would return to England without that for which they came. All of which shows the value of skill and foresight in affairs of this kind.

When the next challenge comes, as come it will, we trust that the lesson which Messrs. Crane and Schroeder have taught, will be taken advantage of by American motor boatmen who feel an ambition to bask in an international light, so to speak, but are not always willing to pay the price which this demands. As for Commodore Schroeder, we extend to him our most distinguished congratulations. His patriotic visit to Southampton Water, England, last year, where he captured the international prize with his Dixie, is fresh in mind, and now he has achieved a greater triumph, which will perpetuate his name in the young but ever-growing power boat annals of this country.

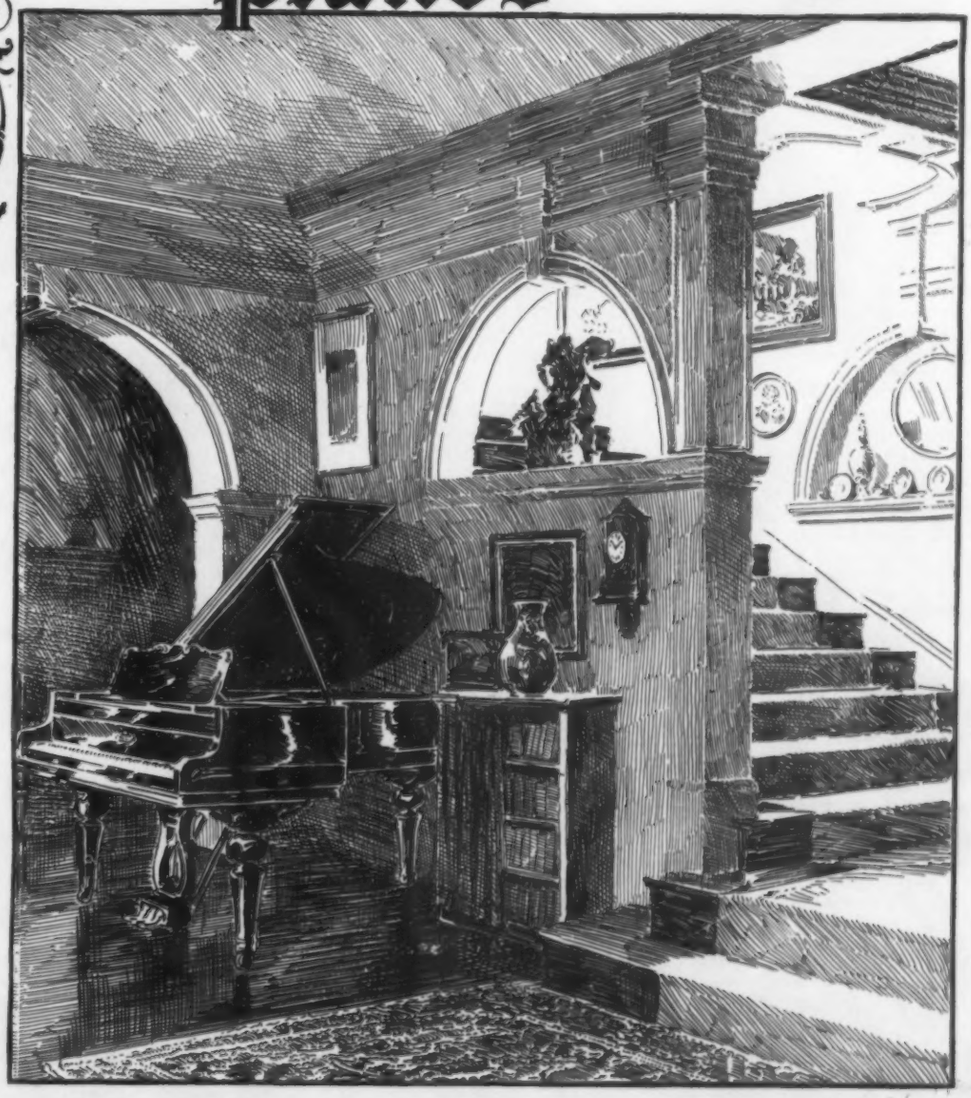
The Deep-Sea Sailor

In the perusal of Mr. Hain's account of his cruise around Cape Horn, the impression is strong that the lot of the sailorman on the American square-rigger of the present day is hardly an enviable one. Let us look for a moment at the men who ship on her. The captains and mates are genuine "Yankees," but in the average crews of from eighteen to twenty-five men there is probably not one American-born sailor. They are made up of the scum of foreign nations: Norwegians, Swedes, Dutch, French, English and a few Irish. Never, if it can be helped, will a captain of a Yankee clipper ship an American crew. The reason is, that Yankee sailors will not be hazed with impunity any longer, and nine times out of ten, when struck or beaten, they will either retaliate instantly or give the captain a siege in the criminal courts as soon as the vessel reaches port. It must not be thought, however, that Americans are not good sailors, for this is not the case. In the navy they have no superiors, nor in vessels making short voyages. Although many captains are not at all brutal in their treatment of sailors, yet they nearly all agree that on a long voyage of this kind the sternest discipline is necessary. Many of the older sailors are used to it, and the slightest softness or kindness in the captain's nature is looked upon by the crew, as it would be by a crowd of savages, as a sign of weakness in his character. As there can be no favoritism shown, without provoking encounters in the forecastle between the men, it is "damn one, damn all," and if there happen to be a few American sailors on board who object to rough treatment and become sulky there is but one way for the captain to do, and that is "put them through" a course of disciplining. This last has a meaning according to the nature of the captain, but it may be safely said that there is little time wasted in idle argument when the never too gentle tempers of either the mate or captain have been tried to their exceedingly short limit.

Next Year

Indications are that the season of 1909 will be one of the best years for yachting in the history of the sport. At least two well-known designers are now engaged upon tentative plans which will occupy them throughout the fall and early winter months, and there is reason to believe that a number of men of wealth who had turned their attention to other things will resume activity on the water. Men who know believe that a challenge for the America's Cup will be received and accepted by October. Those who are most conversant with New York Yacht Club affairs admit that the desire to avoid a contest for the international trophy is far from the minds of the leading spirits of that organization. They know, as all discerning persons know, that it has been the cup won by the schooner America which has given to the New York Yacht Club a large portion of its prestige; and as the example and influence of this club leave its imprint upon the sport in general, it is not wrong to assume that the inclination to let the trophy lie and gather rust is farthest from the minds of the influential members.

Chickering pianos



THE RESULT OF SKILL, inspired by a keen appreciation of the artistic and a desire to live up to an enviable reputation, directed by the latest scientific knowledge, and practical experience gained by eighty-five years of piano building. ¶ The resulting excellence, both as to tone, touch and general staying power, is the reason and the only reason for the uniformly high favor in which it is held in exclusive musical circles. ¶ It is conceded to be a standard of comparison for all other makes.

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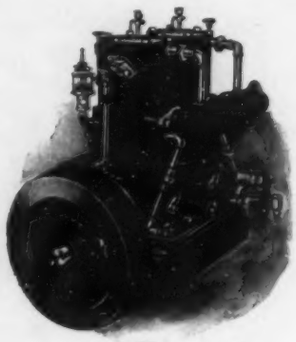
New Ideas in Craft, Engines and Accessories



Denatured Alcohol as Fuel An Eastern manufacturer of two and four-cycle marine engines frankly states that he is experimenting with a new form of carburetor which will allow his engines to be run on either denatured alcohol or gasolene, and that it is so designed it can be placed on any of his engines now in use at comparatively small expense.

Moreover, he states that by the time the price of denatured alcohol will have fallen to that of gasolene he will have his invention perfected in such shape as to make it practical for application to all his engines.

It is not necessary, however, for the cruiser to wait until the price of denatured alcohol has dropped or that of gasolene has soared in order to obtain benefits of the new fuel.

It is at present in a large number of cases absolutely the best and most practical fuel which the cruiser can use in his galley.

It is certainly an ideal fuel when its economy, cleanliness and the ease with which it may be handled are taken into consideration.

A factor contributing greatly to the popularity of denatured alcohol at the present time is the very neat and handy package in which the fuel is supplied by the Alcohol Utilities Company. Heretofore the custom of packing alcohol in glass made the handling of it at times both wasteful and unpleasant. The screw-top tins of the Alcohol Utilities Company fill the bill and increase the convenience of handling and storing their contents.

An Electrically-Lighted Motor Boat The cleanliness, convenience and brilliancy, combined with the total absence of odor and smoke, particularly commend the incandescent electric light to the motor boat owner.

Electrically-lighted cabin motor boats are no rarity to-day, and the Dayton Electric Manufacturing Company, of Dayton, Ohio, and 20 Vesey Street, New York, have proved conclusively that

The Apple Battery Charger, which generates the current.

a man with a small craft of even 16 or 18 feet in length can have it lighted electrically as well as not.

Their outfit consists of an Apple battery charger with a Dayton 14-S switchboard, which makes all connections between the dynamo and battery and shows the operator the state of the current supply at all times, and a Hubler-Dayton storage battery the units of which are non-breakable.

The Dayton 14-S Switchboard, which governs connections and shows state of current supply.

With this outfit there is plenty of current for igniting the engine and supplying three incandescent lights as well as current for the exploring lamp, electric cigar lighter and electric siren, horn or whistle. These latter accessories being used but intermittently, do not materially reduce the electrical supply.

The wiring plan for the outfit is devised for taking the current for ignition and lighting from the storage battery while the dynamo keeps the battery recharged. The switchboard is a terminal for all the wires between the dynamo and battery, and by means of this switch and the voltmeter the operator knows at all times precisely how much current he has at his disposal.

The Hubler-Dayton Storage Battery, which stores up the current.

An Ingersoll in the Bermuda Races The cost of an article is not always a measurement of its usefulness or reliability. There are thousands of men who to-day are wearing dollar watches because they find them accurate and convenient, but who originally bought these very moderately priced timepieces because they did not care to run the risk of damaging costly gold watches.

One of the latest instances of how the Ingersoll watch gives good service is illustrated by the following extract from a communication received from one of those who sailed on the schooner Venona in the Bermuda ocean race:

"Before sailing on this race I decided that my own watch was too valuable to be ruined by salt water, and knowing the accuracy and reliability of the Ingersoll watch, I purchased one of these and deposited my gold watch with the jeweler.

"After we left Marblehead our navigator discovered that he was without a watch, and as I really had no need of mine I lent it to him to be used on the trip.

"Of course, we had a regularly adjusted chronometer on board, but in the very rough weather which we had it was necessary for someone to watch the time closely as the navigator took his sights. My watch was the only timepiece used by the navigator during the entire trip to and from Bermuda, and it proved itself an excellent supplement to the regular chronometer.

"Our navigation was so successful that at noon the skipper announced that we were exactly 54 miles from Bermuda. At 2.30 a man was sent to the masthead, and was told he should be able to see land within 10 minutes. As a matter of fact, land was discovered in less than 5 minutes, and directly in our course was St. David's Head, the point where the finishing line was located.

"The race from Marblehead to Bermuda covered a course of 675 miles, or approximately 755 statute miles. We were out of sight of land for four days, and struck our objective point on a small island not over 12 miles in its entire length.

"I think this would be a pretty good word for the accuracy and reliability of the Ingersoll dollar watch."

Thomas A. Edison's Ignition Outfit. Thomas A. Edison has said that his ignition outfit, which has proved such a blessing to motor boat owners, was perfected out of necessity.

The electrical wizard needed a satisfactory apparatus for his own use in experimental work, and as none was to be had, he made one of his own. Later on he was induced to give others the benefit of his invention by offering it for sale.

The general opinion of the motor boat fraternity is that the Edison primary battery and spark coil deliver a perfectly steady current of uniform voltage when the engine is in operation, and there is absolutely no waste of current by local action when the engine is standing idle.

This is because Mr. Edison has succeeded in overcoming those two arch foes of successful ignition—local action and polarization.

Local action in the zinc plates is prevented by amalgamation, 2 per cent of mercury being incorporated in the zincs when they are cast.

Edison Primary Battery in which local action and polarization are overcome.

Polarization is overcome by the use of a compressed copper slab for the negative plate. Definite chemical action by the solution of high-grade caustic soda produces a plentiful supply of

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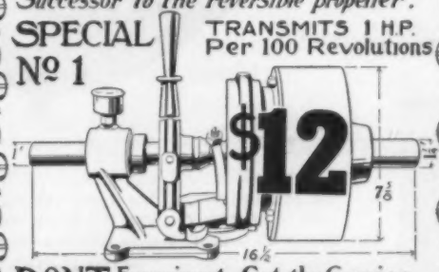
STOP! LOOK! LISTEN!
The Gear Sensation of the Year
Gies Reverse Gear
"Successor to the reversible propeller."
SPECIAL No 1
TRANSMITS 1 H.P. Per 100 Revolutions



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Be bamboozled by similarity in names— The Gies Reverse Gear is made only by
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Fasten It on Your Bulkhead or Coaming

THE INGERSOLL AUTO WATCH

¶ Is small, handsome, accurate. ¶ Its specially large figures are easily read. ¶ It is water tight, moisture and acid proof, and has an offset case that keeps the time right under your eye.

Does the work of an $8.00 auto clock.

PRICE POST PAID ONLY $4.00

Save wear and tear on your expensive time piece.

¶ The new, thin model Ingersoll Watch costs but $2.00 and keeps accurate time. ¶ It will give you the same service as your $100 gold watch—and should you drop it overboard—it's only a couple of dollars gone.

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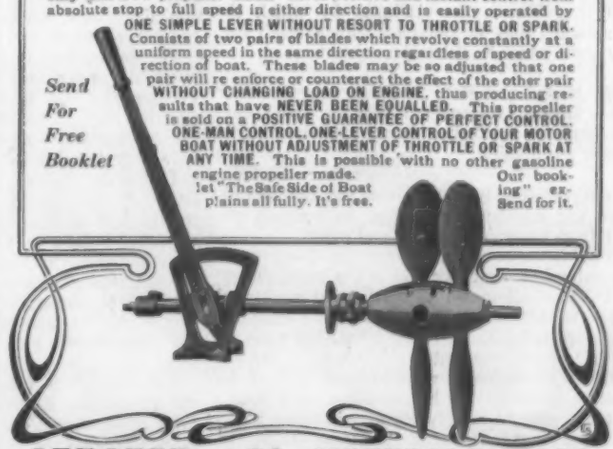
Our booklet "The Safe Side of Boat" explains all fully. It's free.

Our booking" explains. Send for it.



C.F. ROPER AND CO. HOPEDALE, MASS.

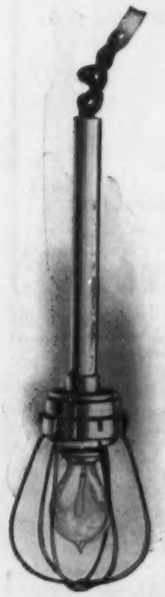
oxygen in the copper to throw off the hydrogen bubbles as fast as they form.

This explanation will be of interest to engine operators who are curious as to how the Edison battery can spark an engine all of one season and well into the next without ever missing fire or requiring any attention whatever.

When the Edison elements are finally used up new ones may be secured of any electrical supply store, at small cost, and put into the porcelain jars that never wear out. The cells then become the same as new cells.

A Safe Exploring Lamp. There are times at night when things go wrong, and the owner of a motor boat wants to examine his tanks, piping or make an investigation of the "innards" of his carburetor, and a lighted match would not be conducive to the best results.

To fit just such cases as this the Wico Inspection lamp has been brought out by the Witherbee Igniter Company, of the Motor Mart Building, Sixty-second Street and Broadway, New York City. The inspection lamp outfit consists of a four-candle power incandescent bulb, mounted on a brass handle with a wire guard and connected with 7 feet of silk-covered flexible wiring, ending in two terminals for attaching to the battery. The lamp requires but six volts, and needs simply to be connected to a six-cell ignition dry battery, to give a thoroughly efficient light for examining or tinkering with the engine.



The Wico Exploring Lamp, which may be connected up to a dry-cell ignition battery and gives a 4 C.P. light.

The wire guard and incandescent bulb may be instantly removed and a new bulb substituted when desired. The outfit is packed in a neat box with a screw top, which protects both lamp and connection and makes a very convenient storage case, which may be carried in one of the lockers until needed. A particularly meritorious feature, and one that will be greatly appreciated by the motor boating public, is the readiness by which the illumination may be obtained with a small battery from which to draw the current.

A Ventilated and Rat Proof Locker; a Great Convenience in Club House Furnishing. Being near the water a boat or yacht club house must necessarily be much damper than the average dwelling. It is therefore only by means of the utmost vigilance and constant airing that its contents are kept from becoming mouldy and musty.

For this very reason, a closet that would serve admirably in a residence will in the yacht club or boat house allow clothing or anything stored therein to become mouldy and mildewed when one least expects it.

Furthermore, the water side seems to have a particular fascination for rodents, and some of the choicest specimens of the rat tribes, with hearty appetites, may be usually found sojourning along the water front in summer. And these frequently, by hook or crook, gain their entrance into the club's precincts. On account of these two enemies, rats and dampness, the ordinary wooden locker is decidedly unsatisfactory. They are so unsatisfactory in fact that the ventilated steel locker, which is absolutely rat proof and amply ventilated, is really the only type to be considered in the modern club house. They occupy less room than wooden lockers of the same inside dimensions, they are handsomer in appearance, and being practically light weight safes, render one's belongings immune from the borrowing propensities of that well-known individual who is always short of some article and wants to borrow some one's else "for the day," sometimes without the formality of asking consent.

The all-steel locker made by the General Fireproofing Company, of Youngstown, Ohio, would

Two ventilated steel lockers which are rat proof and furnish security from unauthorized intruders.

seem to be the very type which every club house has long needed. They may be obtained with solid doors with slats above and below, or with all-slat doors, doors with expanded metal panels or with doors and the three sides of the same material.

An Ounce of Prevention and a Means for Applying It. A very heavy percentage of ignition troubles is due to expecting too much of a good battery, or, failing to discriminate between a battery which is in good condition when installed and one which is radically weak or has run down through local action or other causes.

The best dry battery that ever was made will eventually deteriorate even though not in use. Furthermore, one weak cell will pull down the effective force of the other cells in the circuit.

When a cell gets down to 5 amperes it is about time to replace it with a new one.

The main difficulty heretofore has been to know definitely when one's ignition dry battery was falling down below the requisite amperage, and when it did so whether the battery as a whole or simply one or more cells needed replacing.

Ammeters, of course, and good ones, have been made right along and have always been procurable, but the price at which most of them were sold was rather prohibitive of their universal adoption.

The Elite Pocket Ammeter, manufactured by the Manhattan Electrical Supply Company, 17 Park Place, New York City, and which retails at $2.50, has filled the bill as far as efficiency, portability and accuracy, combined with a very low cost price, are concerned. This ammeter, no larger

The Elite Pocket Ammeter, by means of which the amperage of one's batteries may always be known.

than an ordinary watch, is made with hardened and polished pivots, has a scale measuring from zero to 30 amperes, and has a handsome nickel case with a flexible cord attached to upper contact. It works regardless of polarity and is enclosed in a neat leather case with a snap glove fastener, and may be carried in the vest pocket as readily as a watch. With this ammeter it is possible to test the battery, weed out the exhaust cells and keep the ignition apparatus in a state of highest efficiency.

"A Good Thing to Look Into." This is the title of an eight-page booklet just published by the Racine Boat Manufacturing Company, of Muskegon, Mich., to interest prospective investors in an issue of 7 per cent stock in that concern. It is very clear, concise and to the point, and as the Racine people are desirous of interesting the greatest number of boat owners in their concern, we publish it herewith, for YACHTING's list of readers and the largest number of boat owners of the better class are practically the same thing.

"The purpose of this folder is to sell you some stock in our company. The stock is good; our company is good; and our reasons for selling the stock are good; they are simply that if you'll put a little of your money with ours, we'll both make some more.

"You see, it's this way:

"Here for more than twenty-five years we've been plugging along in the boat business. Started in a little one-story shop across the lake in Racine—that's where we got our name. We used to make the shiny little 'Veneer' boats in those days—the old timers will remember them.

"Well, the boat business grew and we grew, and finally we moved over here to Muskegon; found the natural facilities for manufacture and expansion were much better here, and we built a new factory.

"Now, that factory is the one particular pride of our lives. With seven big buildings, three long docks, four deep-water slips, marine railways, launching ways and every conceivable facility for ship building, we have a plant that will turn out a 16-foot canoe or 300-foot revenue cutter; a 1-hp. 'Kicker,' or a quadruple expansion steam plant that will turn up as many thousand indicated horsepower as you care to pay for.

"And we make everything ourselves right here; we buy practically nothing except raw material, because we found that, if we wanted our engines as good as our boats, we'd have to build them ourselves; and the same way with propeller wheels and fittings, and even down to cushions.

"So we do the whole thing ourselves—and *know* it's right. And the result is that Racine boats have come to be known as the best there is—that's the kind of work we do.

The Witherbee Battery

is a necessity on a cruise, whether your craft is a power boat or yacht.

THE Witherbee provides current for interior lighting, side lights and inspection lamps. It improves the appearance and efficiency of your boat and makes every cruise enjoyable.

FOR IGNITION

It is universally recognized as the best ignition system extant. It is part equipment of every power boat whose owner desires the best ignition obtainable. Don't start on a cruise without the Witherbee Battery.

Wico Inspection Lamp, Wico Charging Device, Wico Ring and Roller Timer, Volta Magneto, Witherbee Batteries, Wico Ignition Wire.

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The Ideal Outfit for Double Ignition

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"COMPACT"

gives the most perfect, accurately timing and reliable ignition.

Ball Bearings, Spring Ball Connections, Bronze and Rubber—No Composition.

Investigate this ***now*** before experimenting with worthless devices.

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Write for our "Yacht Book." It's Free.

Start Right This Year

IF a disappointed *"Old Hand,"* because of previous unsatisfactory motor experience, learn the meaning of "Engine Satisfaction" by putting in a **"BUFFALO."** If a *"New Beginner,"* guard against trouble and ensure a pleasurable start and continuation in motor boating by following same plan

Engines for Any Size Boat, for Any Kind of Work, for Use Anywhere—the Dependable Kind which Have Created the "Buffalo Reputation."

2 to 100 H. P., 2 to 6 Cylinder, in regular Type; 6 to 54 H. P., 1 to 6 Cylinder, in Slow Speed Heavy Duty Type. All "BUFFALO QUALITY" throughout.

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Then by actual test in your own way, prove to your own satisfaction the truth of every claim we make for

PANHARD OIL

"The Oil in the Checker-Board Can"

Proves not by color, but by actual test in your motor, that it is free from carbon.

Every cylinder oil manufacturer claims his oil to be non-carbonizing—we prove it: You can quickly satisfy yourself that Panhard Oil will not carbonize, and that it gives perfect lubrication at all temperatures.

Inferior oils are sometimes represented as Panhard, so make sure you get the genuine. The new Sealed Can protects you when seal is unbroken. If you value the life of your motor, end your lubricating difficulties at once by getting Panhard Oil.

Write today for our book "Lubrication," which will recommend the grade suited to your motor.

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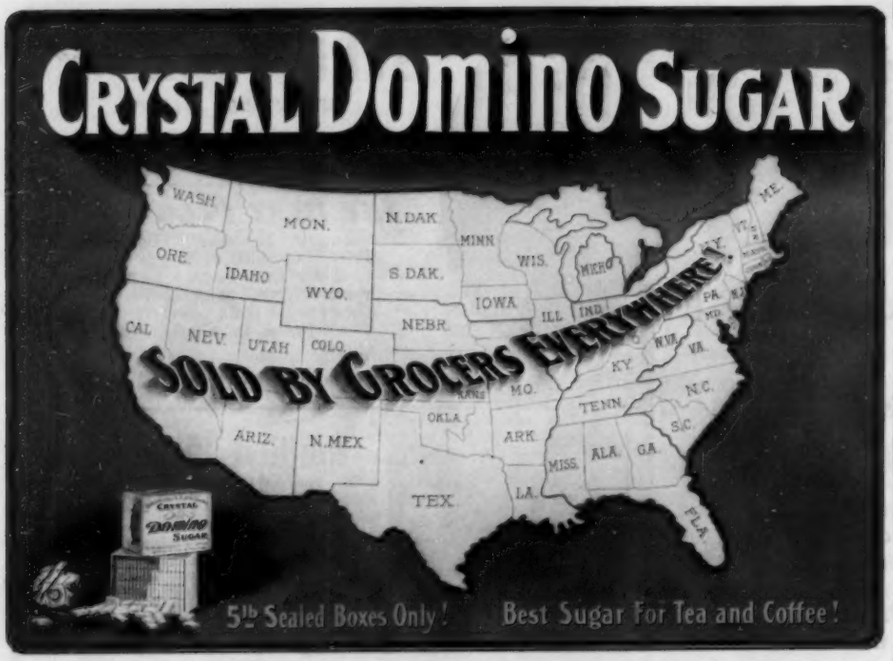

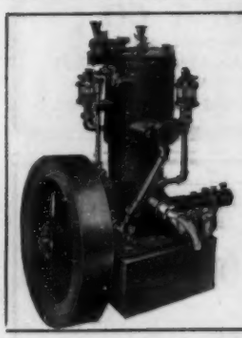

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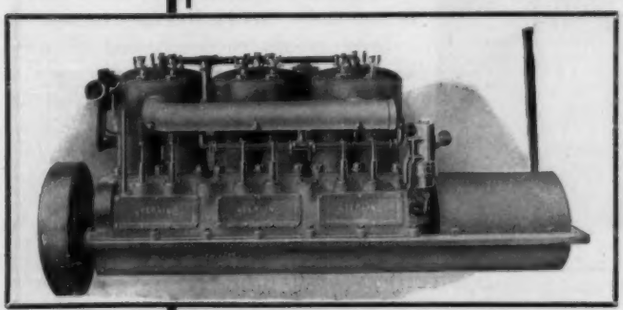
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"Then there's another reason:

"In the last few years we've been doing more and more government work. We haven't gone after it much in the past, because we haven't had time; but we're going to make time, some way, in the future, because there's good profit in it.

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"Our financial department, too, is asking for additional working capital for carrying the large government and commecial work that we have orders for now, and our purchasing agent feels that with larger funds various economies could be effected.

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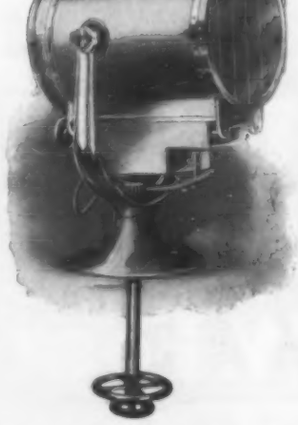

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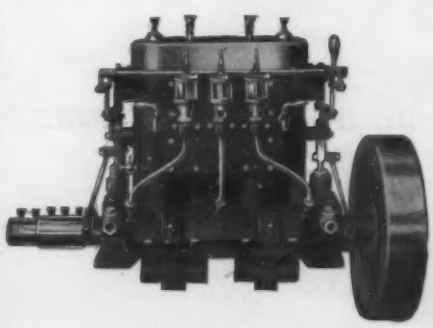

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is the ONLY mooring which NEVER drags or balls up.

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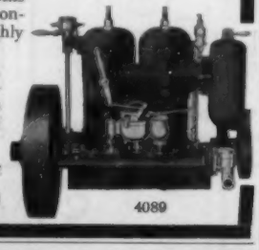

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This device placed on the combing of your Motor Boat enables you to run your engine and steer your craft at the same time. Simple, positive, practical. Neat fixture in any boat. Attachable or detachable without cutting tiller rope.

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J. A. GARRETT, 74 State Street, Auburn, N. Y.

Storms and Storm Signals

(*Continued from page* 145.)

The study of the weather from clouds is more or less a local art—differing widely with both latitude and longitude. The heavy cumulous cloud of summer, particularly if dark at the bottom, is an indication of coming thunder storm. The cirro-stratus clouds, which gradually give place to the alto-cirrus, usually precede bad weather. These are the clouds which cause rings around the moon, in itself a sign of coming change. Stratus cloud is usually simply fog, at an elevation of a thousand feet or more, and it is not at all a sign of bad weather, occurring frequently in dry weather—hence the name, dry weather fog.

There are localities where clouds are always present—over some small islands the heated air from the land coming in contact with the cooler air of the ocean causes a continual bank of clouds to lie above the land, when, of course, their presence does not indicate anything but their own process of formation.

Taken in conjunction with the barometer, however, the clouds form a very good indication of weather changes, when the map is not available, and any skipper will consult both before making up his mind as to what to expect. The clouds also serve as an indication of wind direction, and often contradict the surface wind. It is not uncommon for clouds of two altitudes to move in opposite directions, showing clearly that there is a wind above and a wind below, the latter probably local in character and possibly a result of the main or upper current.

No man can call himself a mariner who has not some knowledge of meterorology, and no one should attempt to do anything but fair-weather navigation who cannot read a weather map, and who cannot safely steer his ship away from the storm center of a hurricane if he be caught in it. In the Northern hemisphere, all circular storms revolve in a direction opposite to the hands of a watch, so that with the wind astern the vessel should be edged to starboard. In the Southern hemisphere the circular storms revolve with the hands of a watch, and the ship should go to port with the wind astern, in order to go from the heavy winds to the lighter ones, and away from the dreaded center or eye of the cyclone, where the wind is fiercest, and where at any moment the vessel may be taken all aback by the storm center passing over it and bringing the fiercest blow of its whole area to strike the ship ahead and iron her out as effectually as if she were chained.

The International Race for the Harmsworth Cup

(*Continued from page* 131.)

the other vigorously shaking his companion, who still lay limp and insensible. Failing to arouse him, Captain Pearce managed to shut down the engine without help, after running a mile along the bay, and then collapsed himself. A doctor from one of the pleasure boats witnessing the races was sent to the Dixie, and both men were revived.

It was a splendid victory well earned.

Before the race there had been many who had misgivings. Dixie had been launched only a week before, and had had little time to tune up and get into racing shape, whereas the British contestants were seasoned veterans. Indeed, so far behind was the work on Dixie's engines that it was said the builders had worked night and day for a month before the race, in order to complete and perfect them.

In the light of this, her performance must be

MARINE MODELS

The H. E. Boucher Mfg. Co.

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SPECIAL MACHINERY
PATTERN MAKING
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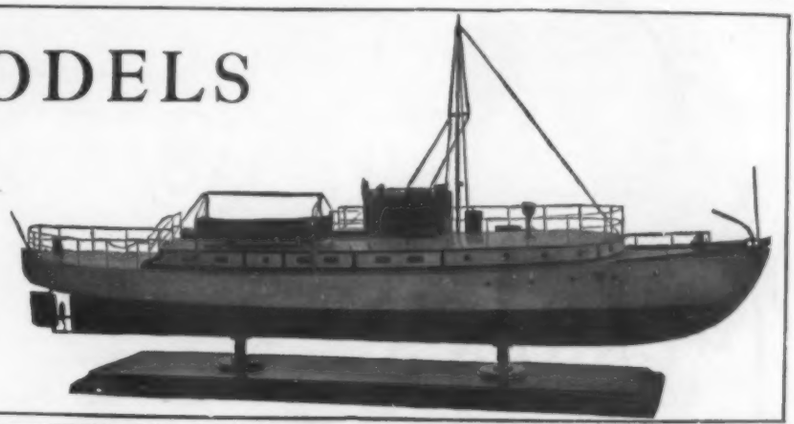

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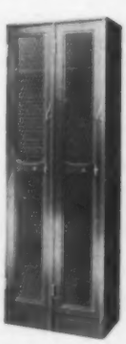

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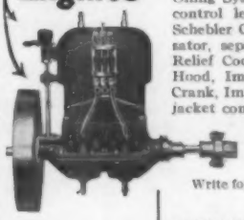
Lackawanna Marine Engines

SPECIAL—Immediate Delivery



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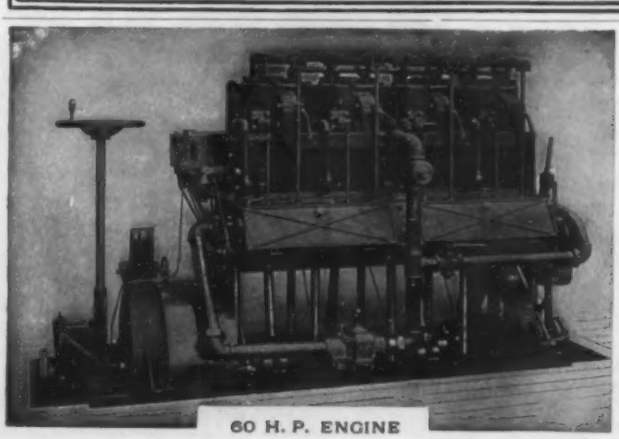

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BORATED TALCUM

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A positive relief for **Sunburn, Chafing, Prickly Heat** and all afflictions of the skin. Removes odor of perspiration. **Get Mennen's**—the original. Put up in **non-refillable** boxes—the **"Box that Lox."** Sold everywhere or mailed for **25** cents. *Sample free.*

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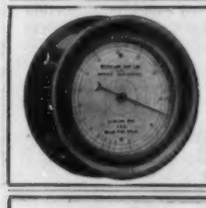

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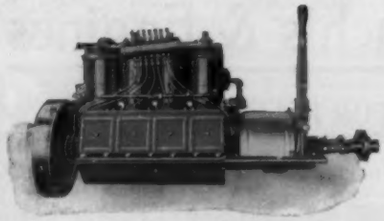

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Nothing Better at Any Price.
Full Information on Request.

Lamb Engine Co. of New York

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considered remarkable. Wonder may well be expressed, too, that Dixie II., with engines of 200 hp. and a hull length approximately that of the English boats, could show her heels to Wolseley-Siddeley, whose engines developed more than 400 hp., not to mention Daimler, with engines of 500 hp.

The explanation is in refinement of design, for Clinton H. Crane has evolved a wonderful speed hull, an engine of extraordinary efficiency and perfection of adjustment, lightness of weight (Wolseley has a displacement of 7,100 pounds, and Dixie but 4,700), and a propeller that exactly fits both as to size and pitch. This latter condition is considerably more of a factor than it is usually supposed to be. At no time, moreover, were the engines of Dixie opened up. They turned up only 750 revolutions, whereas they were capable of doing 900. This means that Dixie could do considerably better if necessary. It was a case of brute force against a beautifully adjusted machine, and the latter won.

A glance at the accompanying tables shows an average speed for Dixie of 27.75 knots, equivalent to 32 miles an hour, over the course of 30 nautical miles, a remarkable long distance speed run. On the day following the races an official speed test was made. Turning 800 revolutions—100 less than her maximum—Dixie, in four one-mile trials, averaged 35.85 miles per hour, which is easily the world record. The fastest single mile was done at the rate of 36.4 per hour. This will undoubtedly be eclipsed when the boat has been run a moderate length of time, and tuned up to the right degree.

The times and averages for the first round of the triangle were:

Boat	Time. H.	M.	S.	Elapsed Time. M.	S.	Avg. Knots.	Avg. Miles.
Dixie II.	3	26	45	21	35	27.8	32.00
Wolseley	3	27	12	22	12	27.02	31.15
U. S. A.	3	30	16	25	16	23.75	27.33
Den	3	31	55	26	55	22.3	25.65

Dixie II. beat Wolseley-Siddeley 37 seconds; beat the U. S. A. 3 minutes 41 seconds, and Den, 5 minutes 20 seconds on the round.

Second round:

Boat	Time. H.	M.	S.	Elapsed Time. M.	S.	Avg. Knots.	Avg. Miles.
Dixie II.	3	48	51	22	16	26.95	31.05
Wolseley	3	49	07	21	55	27.4	31.55
U. S. A.	3	55	15	24	59	24.02	27.7
Den	3	58	56	27	01	22.2	25.55

Wolseley-Siddeley beat Dixie II. 21 seconds; beat U. S. A. 3 minutes 4 seconds, and beat Den 5 minutes 6 seconds on the round.

Third and last round:

Boat	Time. H.	M.	S.	Elapsed Time. M.	S.	Avg. Knots.	Avg. Miles.
Dixie II.	4	09	57	21	06	28.4	32.75
Wolseley	4	10	46	21	39	27.7	31.90
U. S. A.	4	20	11	24	56	22.6	26.02
Den	4	25	47	26	51	22.3	25.70

Dixie II. beat Wolseley-Siddeley 33 seconds; beat U. S. A. 3 minutes 50 seconds, and beat Den 5 minutes 45 seconds on the round.

Summary giving the time for the whole course:

Yacht and Owner	Elapsed Time.	Avg. Knots.	Avg. Miles.
Dixie II., E. J. Schroeder	1 04 57	27.75	32.00
Wolseley-Siddeley, Duke of Westminster	1 05 46	27.35	31.05
U. S. A., J. Sheppard	1 15 11	23.09	27.65
Den, J. H. Hoadley	1 20 47	22.25	25.65
Daimler II., Lord Howard de Walden	Disabled.		

Without doubt, this performance of a boat, with moderate engine power (as compared with that of the British craft), will set designers of power craft all over the world thinking, and result in an increased study of the design of hull, efficiency of engine and propeller adjustment, instead of blind endeavor to accomplish excessive speed by the sheer brute force of engine power.

Now that the race is over and has been won, nothing but congratulations are in order. A trace

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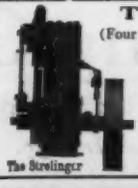

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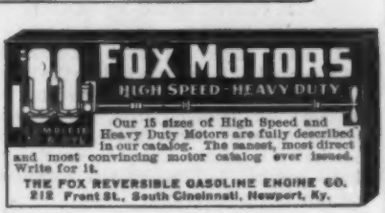
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of chagrin must however be felt at the quality of the American defenders other than Dixie. Had the engines of this boat succumbed to any of the little or big ills that gas engines fall heir to, all chances of holding the cup would have been lost. Whether the fault was with the committee in charge of the races in failing to properly organize sustained interest in the event or with the persistent lethargy of American motor yachtsmen, I will not attempt to say. The fact remains that only four boats appeared for the elimination trials, and only one of the four—Dixie—was built for the contest. The others selected to defend the cup were old boats. Their usefulness, and this was known, rested solely in their ability to keep going in the event of all the other boats breaking down. It was fortunate indeed, therefore, that Mr. E. J. Schroeder was on hand with a worthy successor to Dixie I.

Racing Events for September.

We aim to make this department as complete and accurate as possible. Club secretaries are requested to send to the Editor information of forthcoming events as far in advance as possible.

September 1—

Atlantic Y. C.—Ocean race for cruising power boats.

Chicago—Fourth and last day, Nutting Cup races.

September 2—

Atlantic Y. C.—Second race, Thompson Challenge Cup.

Detroit Y. C.—All-class race on Lake St. Clair.

September 3—

Atlantic Y. C.—Race for cruising power boats.

September 4—

Seawanhaka Y. C.—Special races.

Atlantic Y. C.—Thompson Trophy races.

Chicago Y. C.—First day; Chicago, St. Joseph and Michigan City cruising race.

Toledo Y. C.—Start of third annual long-distance race; assembly of fleet and measurements.

Detroit Y. C.—First day Country Club races.

September 5—

Huguenot Y. C.—Start of cruisers' cruise.

Toledo Y. C.—Second day; third annual long-distance race. for 20-30-foot class. From T. Y. C. to Toledo Harbor light, thence to Detroit River light, thence to stake boat off Put-in-Bay, thence to Harbor Light, thence to judges' boat. For 35 feet and over, T. Y. C. to Toledo Harbor light, to Detroit River light, through Detroit River and Lake St. Clair, thence to Marine City and return to finish line.

Knickerbocker Y. C.—Start of vice-commodore's cruise.

Royal Kennebeccais Y. C.—Squadron cruise.

Detroit Boat Club Yachtsmen—Labor Day cruise; first day.

New Rochelle Y. C.—First day; club cruise.

Eastern Y. C.—Special open regatta for yachts not over 40 foot rating.

Buffalo Y. C.—Annual cruise to Port Maitland; first day.

Golden Gate Y. C.—First day; cruise to Pelaluma drawbridge.

San Francisco Y. C.—First day; river cruise.

Jackson Park Y. C.—Cruise to Michigan City.

Narragansett Bay Yacht Club Association—Bristol Yacht Club fall regatta.

Seawanhaka Y. C.—Fall races.

Brooklyn Y. C.—Races.

Toronto Motor Boat Club—Start of cruise to Hamilton.

Atlantic Y. C.—Free-for-all race.

Seawanhaka Corinthian Y. C.—Races.

New York Y. C.—Races; Autumn Cup; Glen Cove.

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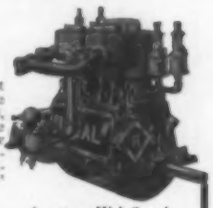

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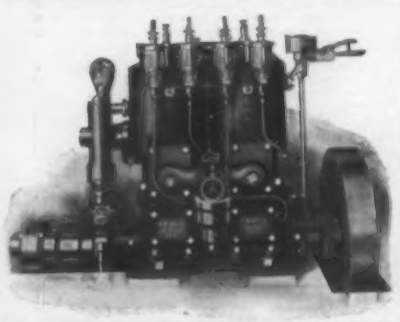

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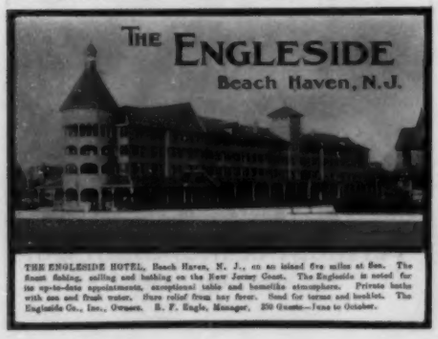

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Larchmont Y. C.—Races; motor boats and racing and cruising classes.
Royal Canadian Y. C.—Cruising race; first, second and third divisions; 14-foot dinghy class.
Detroit Y. C.—Second day Country Club race.
American Y. C.—Endurance race.

September 6—
Buffalo Y. C.—Second day; annual cruise to Port Maitland.
Golden Gate Y. C.—Second day; annual cruise to Petaluma.
San Francisco Y. C.—Second day; river cruise.
South Coast Y. C.—Second day; annual stag cruise to Isthmus.
Toledo Y. C.—Third day; third annual long-distance race.
American Y. C.—Cruise to Grape Island.

September 7—
Detroit Y. C.—Third day; Country Club race.
Milwaukee Y. C.—Fifth Corinthian Cup races for all classes.
Chicago Y. C.—Third and last day, Chicago, St. Joseph and Michigan City cruising race.
Detroit Boat Club Yachtsmen—Labor Day cruise; third day.
Corinthian Y. C.—Grand Handicap Club, 10.30 A. M.
Buffalo Y. C.—Third and last day; annual cruise to Port Maitland, with free-for-all race.
Lakewood Y. C.—Long distance; all classes; to Vermillion, 30 miles.
Golden Gate Y. C.—Return of cruise to Petaluma drawbridge.
San Francisco Y. C.—Third day; river cruise.
Indian Harbor Y. C.—Handicap and motor boat race.
Rochester Y. C.—For all classes; annual cruising race from Oak Orchard to Charlotte.
Larchmont Y. C.—Fall races.
Atlantic Y. C.—Races.

September 8—
Lakewood Y. C.—Class and free-for-all; Vermillion course, 9 miles.
San Francisco Y. C.—Fourth day; river cruise.

September 9—
Golden Gate Y. C.—Pacific Inter-Club Regatta.
San Diego Y. C.—Grand finale.

September 10—
Indian Harbor Y. C.—First annual race for Corinthian Cup of Long Island Sound; yachts 33-foot rating and under.

September 11—
New York Y. C.—Races.
Detroit Y. C.—Edgemere Club race; all classes.

September 12—
Detroit Boat Club Yachtsmen—Ladies' race for the O'Connor Cup.
Duxbury Y. C.—Races, 4.30 P. M.
Buffalo Launch Club—Letchworth races.
Jackson Park Y. C.—Cruise up Calumet River.
Indian Harbor Y. C.—Fall regatta.
Narragansett Bay Y. C. Association—Open races.
Boston Y. C.—Boston Club races at Hull.
Toronto Motor Boat Club—Cruise to Humber River.
Detroit Motor Boat Club—Cruise.
Larchmont Y. C.—Race for schooners.
Royal Canadian Y. C.—Race for Prince of Wales Cup.
Long-distance power race for Fred'k S. Nock Cup.

September 14—
Beverly Y. C.—Seventh Corinthian race; from club house.

September 19—
San Francisco Y. C.—Races around Farallones for Phillips Cup.
Jackson Park Y. C.—Cruising over club course.
Fall River Y. C.—Motor boat races at Taunton.
Larchmont Y. C.—Races.
Manhassett Bay Y. C.—Races.
Atlantic Y. C.—Races.
Toronto Motor Boat Club—Cruise to Scarboro Beach.

September 20—
Lakewood Y. C.—Series; all classes; club triangle; 9 miles.
Golden Gate Y. C.—Cruise outside the heads.
San Francisco Y. C.—Open race.

September 26—
Bensonhurst Y. C.—Annual fall handicap, open to class M and under.
San Francisco Y. C.—Open races.
Bensonhurst Y. C.—Races.
Toronto Motor Boat Club—Cruise to Port Credit.

September 27—
San Francisco Y. C.—Open races.

October 3—
Lakewood Y. C.—Series; all classes; club triangle; 9 miles.
Golden Gate Y. C.—Cruise to Paradise Cove.
San Francisco Y. C.—Open races.

October 4—
Golden Gate Y. C.—Two-day cruise to Paradise Cove.
San Francisco Y. C.—Power boat regatta.

October 10—
San Francisco Y. C.—To Vallejo.

October 17—
San Francisco Y. C.—Open races.

October 18—
San Francisco Y. C.—Open races.

Books for the Yachtsman's Library

The Practice and Theory of Navigation, by Lord Dunraven. We have received from the Macmillan Company a valuable work in three volumes on self instruction in practical and theoretical navigation. The writer attempts neither to address the highly educated nor the totally uneducated, taking the middle course in each chapter, treating the various subjects in terms easily to be grasped by a man of fair intelligence.

The first volume contains chapters on Arithmetic, Logarithms, Instruments Used, Chart and Compass, Terrestrial Definitions, Sailings, Day's Work, Use of Compass and Chart, Magnetism, Causes of and Compensation for Deviation and the Law of Storms.

The second volume gives an explanation of the terms and instruments used in nautical astronomy, and gives instructions in problems that must be solved in order to obtain a master's certificate.

The third volume goes higher, dealing with subjects which it is necessary to know to obtain an extra master's certificate. It also explains how the working formulas are deduced, and dwells at length on stability. Exercises for the student are inserted at the end of every chapter, and there are answers at the end of each volume.

The entire subject is treated in a masterly way, and a perusal of the volumes gives the impression of listening to the words of an instructor who has the happy faculty of imparting his knowledge in the simplest way. Such chapters as that on the Practical Use of the Compass, on Sailings, on Charts and on Mathematics and Astronomy are in themselves noteworthy.

Lloyd's Register of American Yachts. Lloyd's Register of American Yachts for 1908 is now ready for delivery to subscribers. It is the sixth annual volume of this indispensable compilation of pleasure craft and its increased size is a speaking indication of the growth of the sport in this country, in Canada and the West Indies. Three hundred and seventy yachts, both sail and power, are listed, and 2,013 private signals of owners and 365 yacht club burgees are reproduced in colored plates. The book is of inestimable value to all who follow the sport. Details of all craft are given, such as dimensions, owners, designers, builders, rig and engines. In every way, in fact, the publishers have met the demand of yachtsmen for a complete and reliable record. The list of yacht clubs is given in the Register as 386 throughout the United States and Canada. In 1874 thirty-two clubs were listed, but prior to the establishing of Lloyd's Register, in 1902, 170 clubs were known to exist. It will be seen, therefore, that the compilers of this register are confronted each year by a steadily increasing task.

A Valuable Treatise on Sails. The Making, Bending and Care of Sails, by Adrian Wilson, of the Wilson & Silsby Company, is a treatise upon a subject of which little is known even among those who spend a goodly portion of their spare moments, or who, in fact, earn their living under canvas. Mr. Wilson sets out with a statement which is not as paradoxical as it seems, that "More poor sails are made on yachts than in sail lofts." In this he, of course, refers to the intelligent handling of sails when they are bent on spars. The sail maker, Mr. Wilson says, can use all of his skill in a racing suit and spend days on its construction, yet it may all be lost or thrown away by the handling it receives when put on board the yacht. Further on the writer gives instructions as to the way in which sails may be handled by sailors to the best advantage, which is something every yachtsman, particularly if he races a bolt, should read.

The several sails are discussed in an enlightened manner and various evils, such as stretching, bagging and tearing. are analyzed. The setting of the canvas, cause of sails interfering, drying, prevention of mildew, and, in fact, all topics associated with the subject are treated at length.

A Valuable Publication. Ingraham's United States Yachting Directory for 1908 is just out. This directory contains the names of 4,000 prominent yacht owners with their addresses, the yacht clubs of which they are members and a description of the craft which they own. It will form a most valuable reference book for all yachtsmen, and will enable them to keep in close touch with each other.

It is very neatly gotten out and should be in the cabin of every yacht and on every yacht club reading room table.

A Storage Battery Bulletin Bulletin No. 2-B, which will be of value to those interested in the storage battery question, has just been issued by the Dayton Electrical Manufacturing Company, of Dayton, Ohio, and 20 Vesey Street, New York.

The bulletin illustrates and describes a new type of storage battery, and throws considerable light on the subject generally.

A table of comparative weights, bulk and capacity of various sizes will be of value to those desiring to ascertain these points in regard to a prospective outfit.

It is well worthy the study of the motor boat owner, who may obtain it gratis by applying by mail or in person to either of the above addresses.

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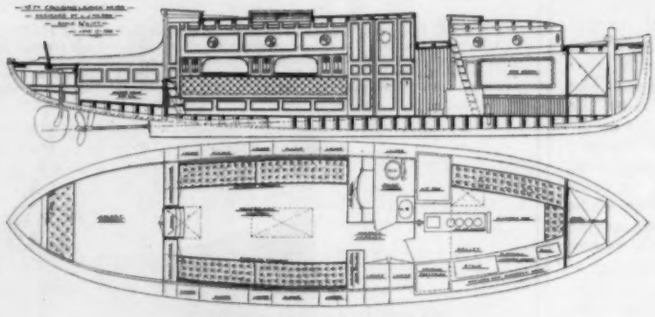

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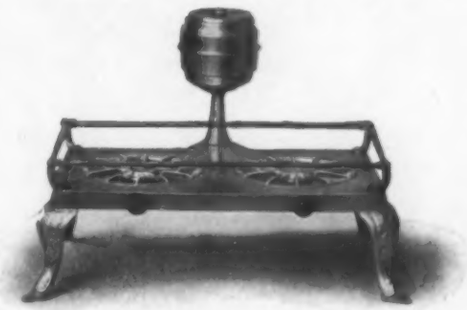

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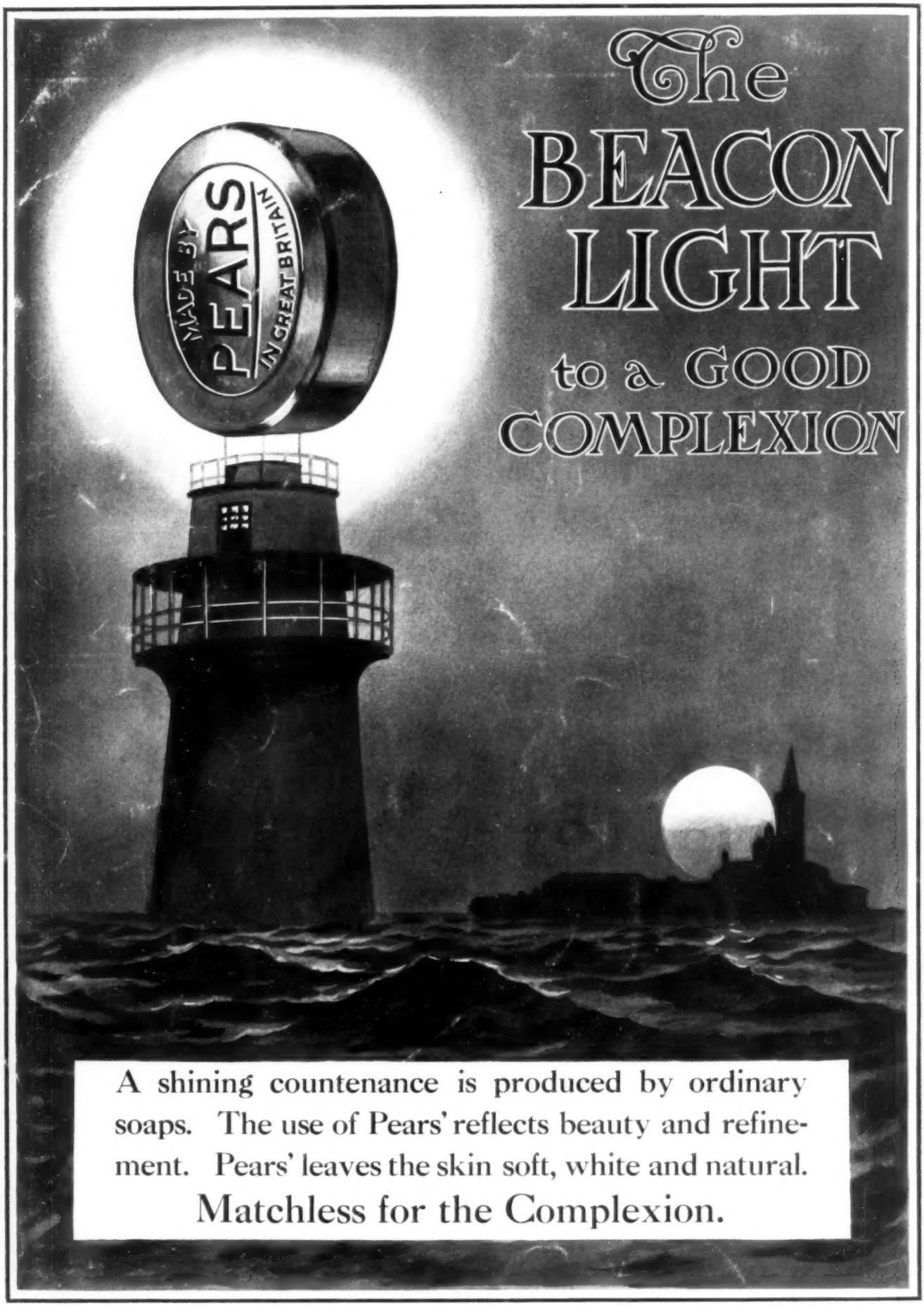
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